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Functional-Plus Foil Tray p. 94
Payoff in Protein Values p. 104

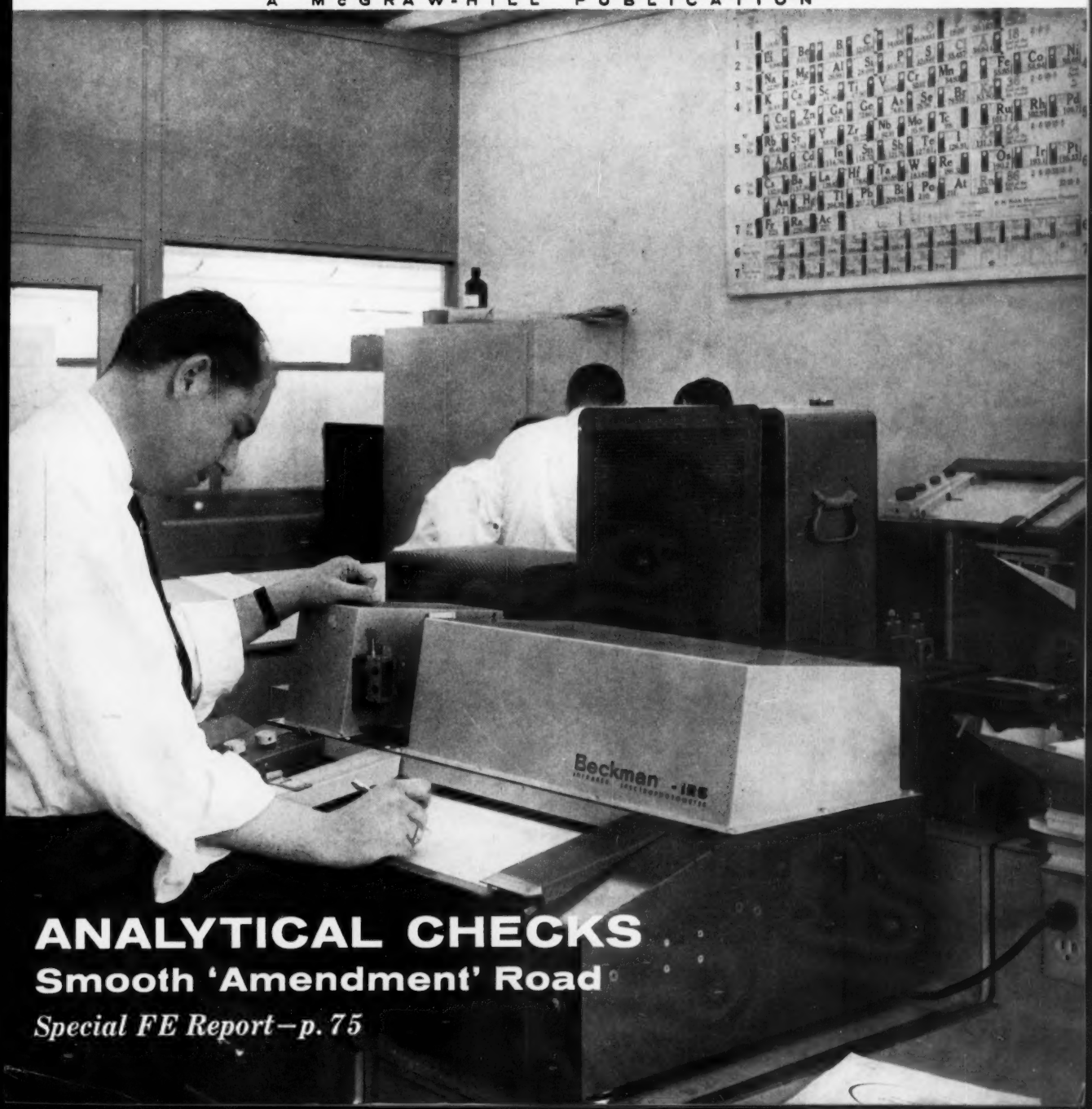
JUNE 1960

$1.00

FOOD ENGINEERING

BETTER MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

A McGRAW-HILL PUBLICATION

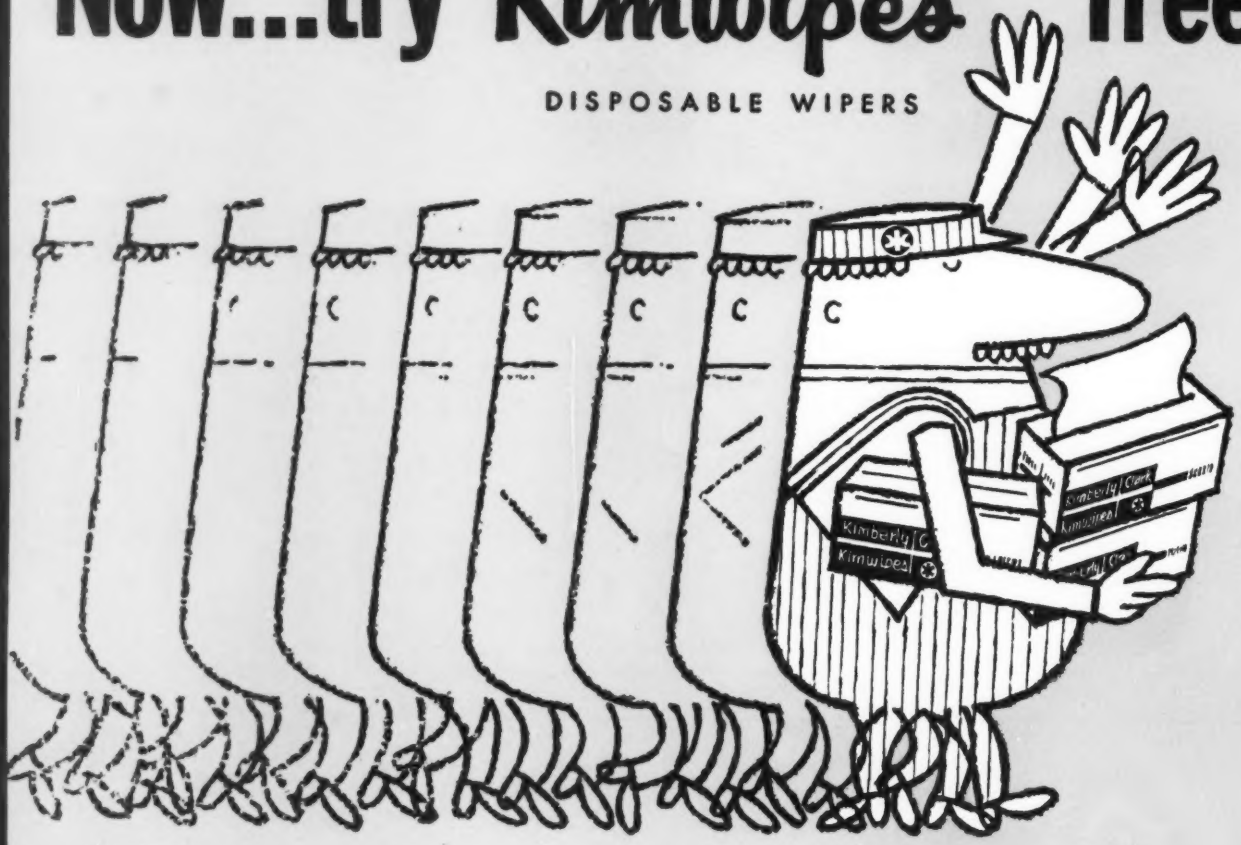


ANALYTICAL CHECKS
Smooth 'Amendment' Road

Special FE Report—p. 75

Now...try Kimwipes® free!

DISPOSABLE WIPERS



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Use Kimwipes for quick, thorough absorption of shortening oils and grease. Use them *wet* for easy removal of sticky frosting, syrups, sugar and flour from workers' hands and machinery. Use both *wet* and *dry* for keeping equipment clean and sanitary. Available in handy pop-up packages or metal wall dispensers.

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Please send me my FREE package of Kimwipes disposable wipers, "900-L."

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Kimberly-Clark

PRODUCTS

FOOD ENGINEERING
FOR MANAGEMENT

JUNE 1960

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KELCO COMPANY

REFINED ALGIN PRODUCTS

technical bulletin

NO.

Use unique Kelco Algin Colloids to improve your food products

SALAD AND DESSERT GELS made with KELCO-GEL HV have superb body and excellent texture. They will not melt, soften or show leakage at room temperatures. Mold release is fast and clean, without heat.

DIETETIC PUDDINGS made with KELCO-GEL LV have firm velvety body for added taste and eye appeal. Palatability of low sugar formulations is greatly improved by the gelling action of KELCO-GEL LV.

PACKAGED DRY MIX DESSERTS made with KELCO-GEL HV and KELCO-GEL LV absorb cold water rapidly to produce uniform, tender-textured puddings, gels and fillings that are extra light and effectively stabilized.

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KELCO-GEL HV is recommended for use where considerable added viscosity is required with a minimum amount of stabilizing action.

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Yours On Request: Free samples of KELCO-GEL HV and KELCO-GEL LV and new Technical Bulletins describing these unique Kelco algin products. At your service, too, are highly qualified food technicians ready to give individual attention.

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Save up to ⅓ on the cost of your next conveyor...new handbook shows how

Tells how to cut planning and installation costs with pre-engineered, ready-built conveyor components for immediate or future handling needs

Install a conveyor system to meet your specific materials handling needs today . . . tomorrow . . . or in years to come. Using Standard's Handidrive handbook, simply order pre-engineered, prebuilt interchangeable conveyor components to which additions or alterations can be made as required.

"Do-it-yourself" buyer-users will find Handidrive assembly is fast, easy. The pre-engineered stock units include: roller conveyors (either gravity push-along or live roller type), inclined belt conveyors, drive units, intermediate sections, curved sections, supports, hangers and other miscellaneous items.

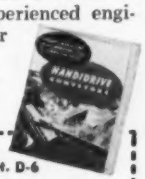
Lower initial cost — you buy only what you need — is only one of many Handidrive "off-the-shelf" benefits. The Handidrive handbook gives full details! Get your copy now . . . free of charge, of course.

3 plans to help you select and order simplified HANDIDRIVE pre-engineered units

"Do-It-Yourself" Plan — Determine your conveyor requirements, then select stock units from Handidrive handbook.

"Recommendations-Requested" Plan — On your request, a Standard specialist will advise you on installation of a custom-tailored Handidrive conveyor

"Leave-It-All-To-Standard" Plan — Standard's staff of experienced engineers will work out your handling problems of a more complex nature.



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Please send me a free copy of your new Handidrive handbook.

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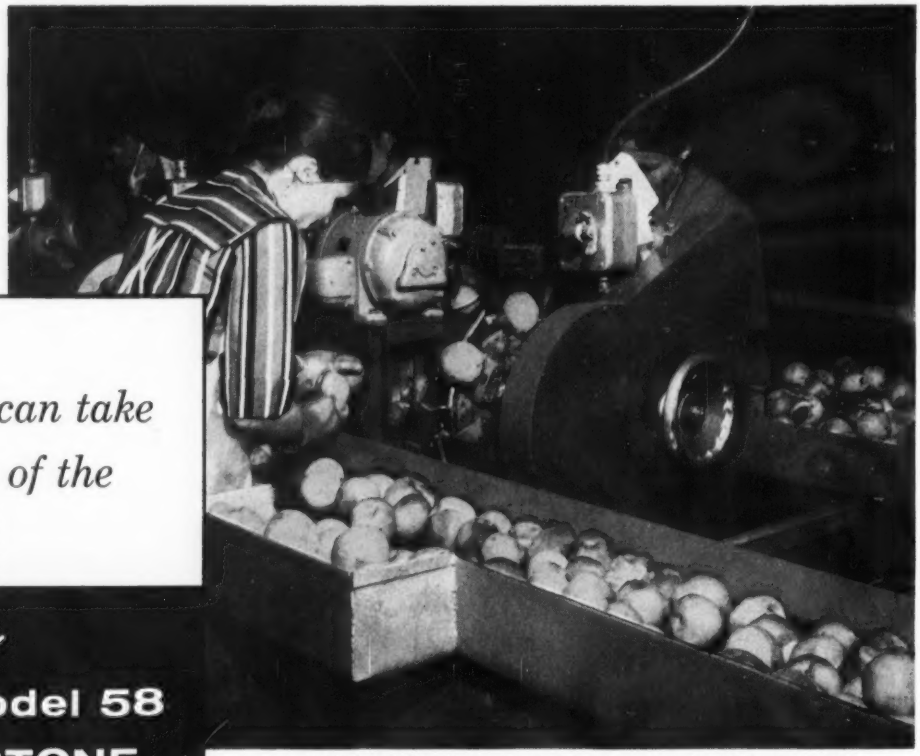
GRAVITY & POWER CONVEYORS
Sales and Service in Principal Cities
OVER 50 YEARS of conveyor experience

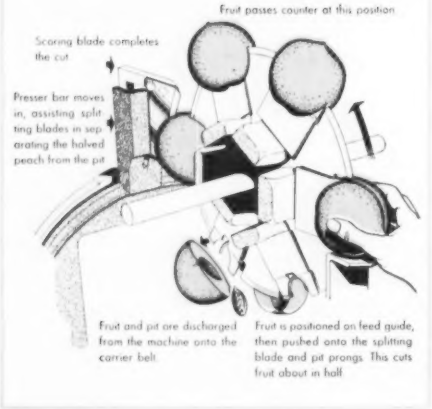


FMC FREESTONE PITTERS operating at the San Jose plant of Tri-Valley Packing Association.

Nothing can take the place of the

FMC Model 58 FREESTONE PITTER

. . . . . for speed, simplicity and economy in freestone peach-pitting operations


Fruit passes counter at this position
Scoring blade completes the cut
Presser bar moves in, assisting splitting blades in separating the halved peach from the pit
Fruit and pit are discharged from the machine onto the carrier belt
Fruit is positioned on feed guide, then pushed onto the splitting blade and pit prongs. This cuts fruit about in half

Simply pre-set the splitting blades and flip the switch. The operator feeds this compact FMC Freestone Pitter and the machine does the rest, smoothly, uniformly – handling all sizes of freestone peaches without pre-grading.

In average operation you'll cleanly halve and pit up to 50 peaches a minute, with total separation of fruit from pit, no fragments left on the pit, and re-pitting cut to an absolute minimum.

Install it anywhere over any take-away conveyor system. It measures only 18″ wide by 28″ deep, and its small number of moving parts makes it really economical to maintain. Stainless steel knives are used, and a pair of water jets play on them to prevent build-up of fruit particles. Simple, open construction makes cleanup an easy matter.

Modern peach canning operations would find it hard to get along without the Model 58. Full information supplied gladly on request.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
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TRENDS & FORECASTS

SPECIAL

FOOD ENGINEERING

SERVICE to EXECUTIVES

Food supplies are running about as large as last year at this time, and demand remains strong. Prospects are for more beef, lamb, milk and dairy products, processed fruits and citrus juices, USDA predicts.

Retail food store sales in March were 5% higher than a year earlier, amounting to $4,529 million. Sales in eating and drinking places were up 6% to $1,314 million, U.S. Dept. of Commerce reports.

Net income after taxes for a selected group of 38 food and beverage firms totaled $72,405,000 for the 1st quarter of '60. This is 1% higher than in 1st quarter of '59, but 17% below 4th quarter.

Biscuit and cracker bakers increased value added to products 20% between '54 and '58, with 3% less man-hours and 7% fewer production workers. Production wages rose 9% for the period, according to Census of Manufactures.

Holdings of canned vegetables were substantially lower in April than a year earlier, USDA reports. But except for sauerkraut, supplies of major items were above 10-year average and fully ample. Frozen holdings also were somewhat smaller than a year earlier.

Processors are aiming for about same overall pack of vegetables this year as last, USDA says. Intention reports for 9 major crops for processing indicate 2% more acreage than in '59. Total supplies of canned vegetables may be slightly smaller in the '60-'61 season because of lighter stocks.

Potato chip sales climbed 12% in 1st quarter of '60 compared to same period in '59, and may hit $525 million for the year, Potato Chip Institute International forecasts.

Cranberry sauce pack in '59 was up 14.3% to 6,988,109 cases, NCA reports.

Canned sweet potato production gained 3.15% last year, for a pack of 6,246,206 cases. But white potato pack was off 13.7% to 3,405,128 cases, according to NCA.

French champagne sales in this country gained 11% in '59, to nearly 3 million bottles, worth about $5 million.

Milk in gallon containers enjoyed a 24% sales gain in '59, Glass Container Mfg. Institute reports. Half-gallons are gaining, too.

Average size of family increased to 3.66 persons in '59, compared to 3.54 in '50, U.S. Dept. of Commerce reports. This trend affects food package size. Non-white families in South averaged 4.67 persons.

Changes in composition of labor force will be seen in next decade as number of workers increases 13.5 million. Less than million of increase will be in "prime" age group 25 to 44. Increase in nonwhite labor force will be substantial.

See Developments to Watch p. 13

American economy in '60's will require 50% more professional and technical people, 23% more skilled craftsmen, 15% more semi-skilled, but no more laborers. Trends revealed in government study point up need for industrial training programs.

One of every three workers is expected to be a woman in '70—or 30 million women compared to 23.5 million now. Will up demand for convenience foods!

THE EASY and PERMANENT WAY

TO RESURFACE and REPAIR CONCRETE and all other type FLOORS

Steelcote FLOOR—NU

4-STEP APPLICATION

Shows how easy it is to use
FLOOR-NU *in PATCHING*

Clean surface. Remove loose concrete with brush or airhose to solid base.

Mix Part A with Part B of the FLOOR-NU package. Prime surface with small units of primer found in same package.

Mix with Part C.

Trowel in and smooth. Application must extend beyond perimeter of affected area.

(Complete, detailed instructions for all types of floors and conditions are enclosed with FLOOR-NU order)

Registered U.S. Patent

EXCLUSIVE EPOXY BASE FORMULA OFFERS A MULTITUDE OF ADVANTAGES

No ripping up floors. No chipping edges. No air hammering. No heating of materials. No expensive tools or special labor. Floor-Nu lowers installation cost, protects against corrosion of 54 chemicals, possesses terrific shatter and abrasion resistance. Eight times stronger than concrete. A 1/8" overlay weighs only 1 lb. per sq. ft. No need to move sewer outlets or machinery. There is no shrinkage. No expansion joints needed. On new concrete a companion epoxy product, Steelcote Epo-Floor-Top, can be rolled on.

BEFORE

AFTER

Steelcote Mfg. Co.,
St. Louis 3, Mo., Rodney, Ontario, Canada

FREE TRIAL OFFER

The Steelcote Manufacturing Company will send one 26 lb. Unit Floor-Nu No. 5 to a responsible company or institution on a trial basis. It is agreed that a reasonable portion of the material may be used to prove its suitability to the buyer's condition. If it does not prove satisfactory, return the unused portion at our expense and your invoice will be cancelled. LET US SHOW THAT OUR STEELCOTE FLOOR-NU WILL HELP YOU—TRY IT NOW.

26 POUND UNIT $18.00

Slightly higher in Canada

FOR FREE ENGINEERING SERVICE

on any maintenance problem, write Steelcote at address above.

Schedule of Events

June

15-17—American Marketing Assn., national conference; Hotel Leamington, Minneapolis.
19-22—American Dairy Science Assn., annual meeting; Utah State University, Logan, Utah.
20-22—Grocery Manufacturers Assn., mid-year meeting; Greenbrier, White Sulphur Springs, W. Va.
23-27—Bakery Equipment Manufacturers Assn., annual meeting; Key Biscayne Hotel, Miami.
26-J1—American Society for Testing Materials, annual meeting; Chalfonte-Haddon Hall, Atlantic City, N. J.

July

19-21—Western Packaging & Materials Handling Exposition; Pan Pacific Auditorium, Los Angeles.
25-27—International Apple Assn., Inc., convention; Fontainebleau Hotel, Miami Beach.

HORS D'OEUVRES

Radio Moscow says that Russia soon will begin mass sales of popcorn, which it calls "air corn in sugar." Mr. K. certainly popped a lot of corn at the Summit, but it was anything but sugared.

Protein requirements of the 2¼-billion-pound dog food business is seen as big potential market for fisheries. The dogs are going to the cats?

Rocky Marciano recently became sales promotion manager for Tid-bit Products Co. Never suspected he had a dainty touch!

Industrial espionage is playing a vital role in modern business competition. Well, it is cheaper to copy than to research.

Although not tops in flavor, instant coffee always tastes the same. And its skyrocket rise to 33.4% of coffee sales again proves consistency to be a virtue.

An IFT survey shows that food manufacturers would have hired 61% more food technologists last year had they been available. And the industry would have made at least 61% more technical progress this year.

If the more than 800 billion cans made in the U. S. in the past 150 years were stacked end to end, they would reach the planet Mercury. Do they have can openers on Mercury?

A high incidence of emotional instability has been noted in obese patients, Nutrition Foundation reports. Seems people eat themselves into the grave to keep calm. Effective, at that!

Recent evidence indicates that wine lowers cholesterol levels. Thought you might like a new excuse for imbibing.

Verdict for Tornado Mill at Kingsmill Foods...

VERSATILE
EASIER TO CLEAN
HIGHER CAPACITY

The evidence is overwhelming. The exceptionally versatile Stokes Tornado Mill is doing a yeoman job at Kingsmill Foods, according to W. G. Kingsmill, President of the Toronto food processing enterprise.

Used for a variety of grinding and commuting jobs, the Tornado delivers improved product quality as well as greater product uniformity . . . all along the line. Kingsmill has found that less heat is generated in grinding . . . and product flavor is vastly improved. What's more, rejects are considerably fewer . . . and batches are ground no more than once with the Tornado. And there are no special requirements in switching from batch to batch.

The new mill moves easily from station to station . . . it's simple to operate . . . and a breeze to clean. Disassembling the rotor for cleaning is now a matter of seconds. Kingsmill also likes the greater surface area afforded by the 360° horizontal screen . . . it gives them greater volume per batch . . . higher production economies.

Find out for yourself the many ways our Tornado Mill can help your process. The Stokes representative in your area will be glad to give you all the facts. Why not give him a call today. Or write to us directly.

Processing Equipment Division
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

STOKES

CIRCLE 9 ON READER SERVICE CARD

Completely automatic Taylor Retort Control System at the new Asheville, N.C., plant of the Gerber Products Company, FLEX-O-TIMER Timed-Program Controllers work in conjunction with FULSCOPE* Recording Controllers—proven dependable in over 20 years of service.*

*Reg. U.S. Pat. Off.

Taylor Instruments

Gerber's problem is our baby!

Famous name in baby foods

protected by Taylor Controls

In their new plant at Asheville, N. C., Gerber Products Company leave nothing to chance . . . or the possibility of human error . . . in processing their complete line of strained and junior foods. Retorting, for example, is a push-button operation. The Taylor SPW-7AV Fully Automatic Control System regulates temperatures throughout the pre-heat, cooking and cooling periods and times the entire cycle.

This Taylor system gives Gerber:

Maximum production from their equipment investment, because of minimum time loss between product changes.

Lowest possible processing costs, because retorts are used to maximum capacity and efficiency.

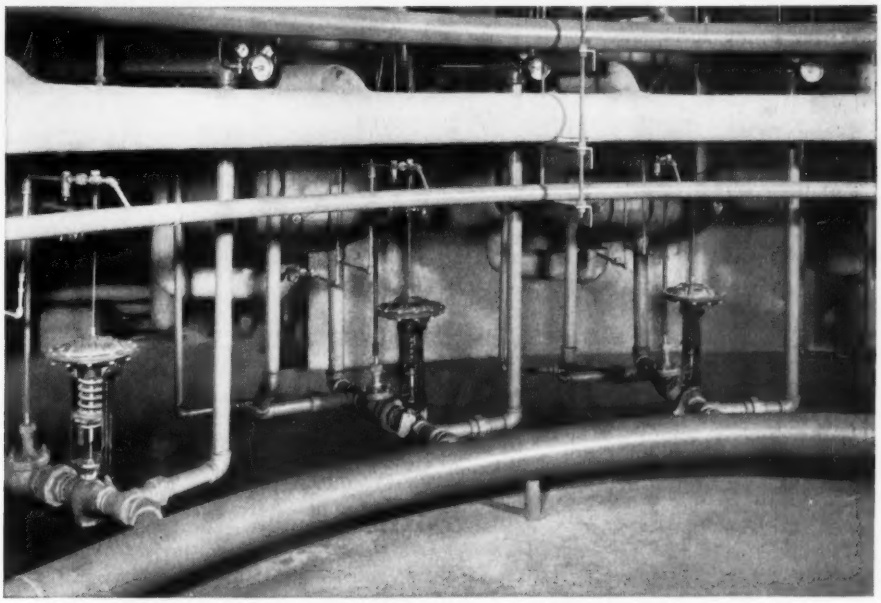
Uniformity of product, because fully automatic operation makes each cook identical.

This versatile control system can be changed in minutes from one form of cook to another. Vent, cook and cool time can be varied in seconds. It can be quickly adjusted to the processing requirements of any product or container size. Easy and economical to install, the unit is packaged at the factory. Requires only wiring and piping connections to instruments and valves.

* * *

Your Taylor Field Engineer can give you the benefit of years of experience in supplying control systems for every stage of food processing. Call him, or write for **Catalog 500.**

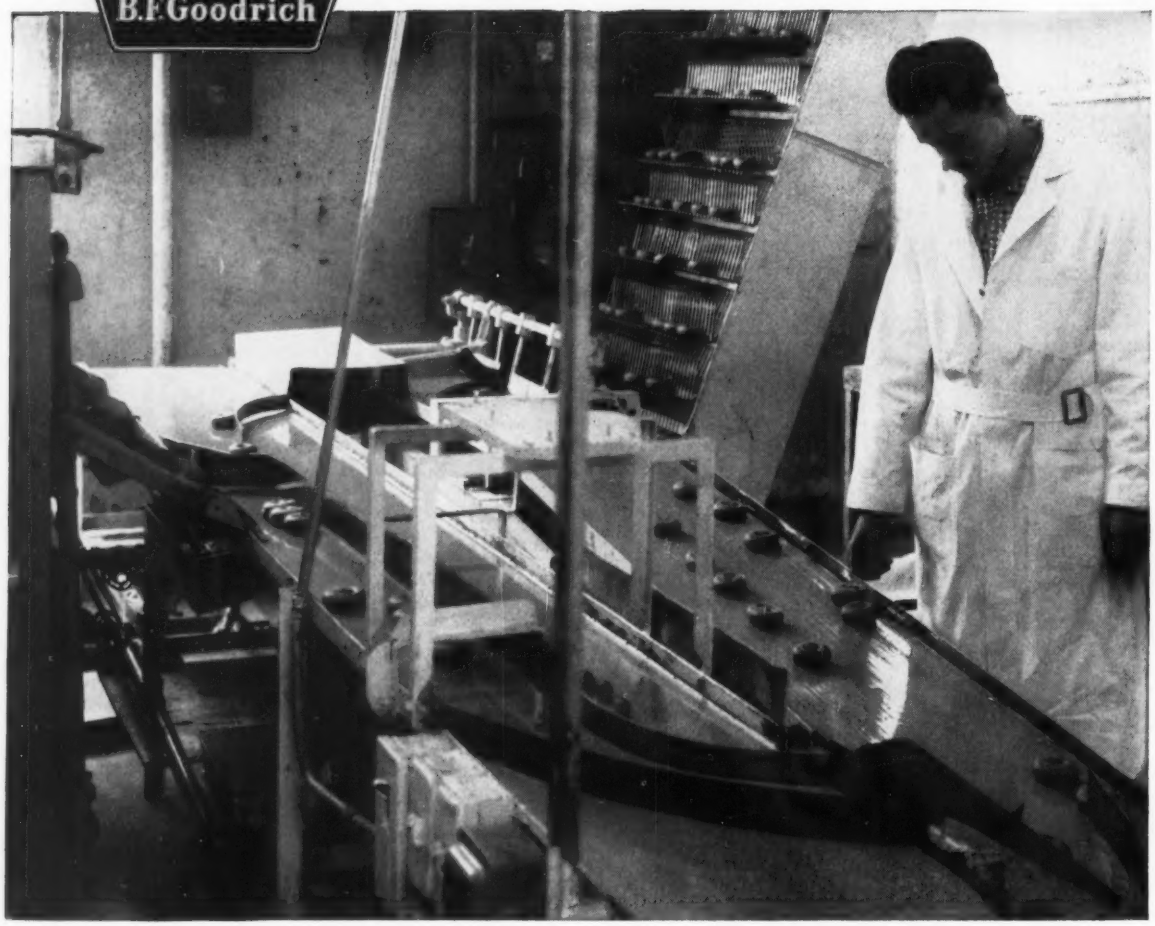
Taylor Instrument Companies, Rochester, New York or Toronto, Ontario.



Taylor Hi-Flow Maximum Capacity Valves in use on retorts at Gerber are sturdy, dependable, require minimum maintenance.

MEAN ACCURACY FIRST

B.F.Goodrich



Koroseal shrugs off hot fat, keeps doughnuts from cracking up

Out of a deep fat cooker and onto conveyor belts come thousands of doughnuts a day. But when regular belts were used here, there was nothing but trouble. Cooking oil from the hot doughnuts soaked into the belts, left stains, made them nearly impossible to clean. Some belts got soft and sticky, others hardened and cracked. None lasted more than a year.

Then a B.F.Goodrich distributor recommended an improved food-handling belt, made of Koroseal flexible material. This B.F.Goodrich belt defies the things that ruin other conveyor belts—warm cooking oil, grease, animal fats, most acids. Koroseal resists cracking and peeling, never gets soft and sticky. It has no odor, no taste, never gets rancid.

A Koroseal belt was tried. That was 2½ years ago. It worked so successfully that doughnuts now travel throughout the plant on Koroseal. The cost of belting and the maintenance of it is less than half what it used to be.

Its smooth, nonporous surface makes the Koroseal belt as easy to wipe clean as a dish. And it has solved the problem of doughnut breakage, too. When jam-ups occur, this belt slides smoothly under the doughnuts without tearing them as other belts used to do.

B.F.Goodrich was the first company to have its conveyor belts found suitable by the Food and Drug Administration for safe food handling under the new Food Additives Amendment. For more information on any of the B.F. Goodrich products developed for handling food, call your BFG distributor or write *B.F.Goodrich Industrial Products Co., Dept. M-855, Akron 18, Ohio.*

Koroseal—T. M. Reg. U. S. Pat. Off.

B.F.Goodrich *industrial products*

DEVELOPMENTS TO WATCH

SPECIAL FOOD ENGINEERING SERVICE to EXECUTIVES

See Who's Building What p. 17

Washington Report p. 21

Fuel cells may replace batteries and gas engines in industrial trucks within 3 yr. Zinc-oxygen unit developed by Exide is lightweight, requires no special controls.

Commercial freezer cools hot pre-cooked foods to zero or below in minutes. Liquefreeze unit is now operating in California plant, employs liquid nitrogen as refrigerant.

Plastic piping can handle water at 180-200F., up to 150 psi. Maker: B. F. Goodrich.

Intravenous injection of natural food enzymes minutes before slaughter is new beef tenderizing technique employed at two Swift plants.

Resistance of botulinum spores to huge doses poses major problem in food preservation by irradiation. R. N. Costilow, Michigan State U., found that exposure to 1 million Roentgens killed 99.9% of spores. But "dead" spores will germinate as rapidly as untreated ones!

Effect on humans and animals of pesticides used on crops is subject of new S.R.I. study financed by $300,000 grant from John A. Hartford Foundation.

New coffee-dispenser brews cup in 9 sec. from ground beans.

Swiss butter molder and wrapper has capacity of 5,400 units (1 lb.) per hr.

Machine determines printability of polyethylene by measuring surface oxidation. Angle of tilt before water droplet flows on film is indicator.

Vitamin C is destroyed by two types of bacteria, actinomyces and coccus, says Japanese scientist. These convert solution of vitamin into carbon dioxide and water. Cocci affect human body; actinomyces, food.

Study of heart and circulatory disease in 26 countries rates consumption of saturated fats highest among indices analyzed, and intake of animal proteins next. *Nutrition Reviews* says results don't suggest sweeping nutritional changes.

Herrings are pumped out of sea and into trawler as fast as 12 tons in 8 min. by new German device. Electrode attracts fish to pumping tube.

Sensitive device connected to miniature radiator transmitter that travels with product being baked in continuous oven broadcasts temperature. Unit is Australian development.

Additives can be finely dispersed into flowing powdered product by spray device that will be made available soon.

New 3-component solder developed by Continental Can enables aersol cans to hold high pressures longer in warm storage. Opens way to use propellants formerly barred by pressure limits.

Flour refining system produces three grades that vary in micron size, starch-protein levels, viscosity, and absorption. Maker is Sturtevant.

STARCHES and SYRUPS

Keep your product in her cart ...week after week

Corn starches and syrups are time-tested, nourishing, economical carbohydrates. They've long been used and accepted as foods and food ingredients. They may be the answer to problems you have resulting from recent legislation regarding foods because:

In addition to being time-tested, nourishing, economical carbohydrates, corn starches and syrups can provide valuable functional properties as:

• Stabilizers • Emulsifiers • Binders • Humectants • Bland sweeteners • Texturizers • Preservatives (of natural body and color) • Thickeners (for consistency control) • Sugar Crystalization control • Coatings—Glazes

CORN STARCH is ideal for baking, baking powder, meats, mustard, salad dressing, custards, pudding, canned soups, etc.

CORN SYRUPS are used in mixed syrups, infant foods, preserves, jams, jellies, baked beans, sausage and cured meats, frozen and canned fruits, frozen deserts and many other products.

CORN SYRUP SOLIDS are widely used in ice cream, baked goods, frozen fruits, dry food mixes, jams, jellies, table ready and canned meats, to mention just a few.

Whatever you may be processing OK BRAND corn syrups or starches will help you keep your product in her cart week after week.

Call the Man from Hubinger ...his service is freely available. Write, wire or phone today.

THE HUBINGER COMPANY

Keokuk, Iowa

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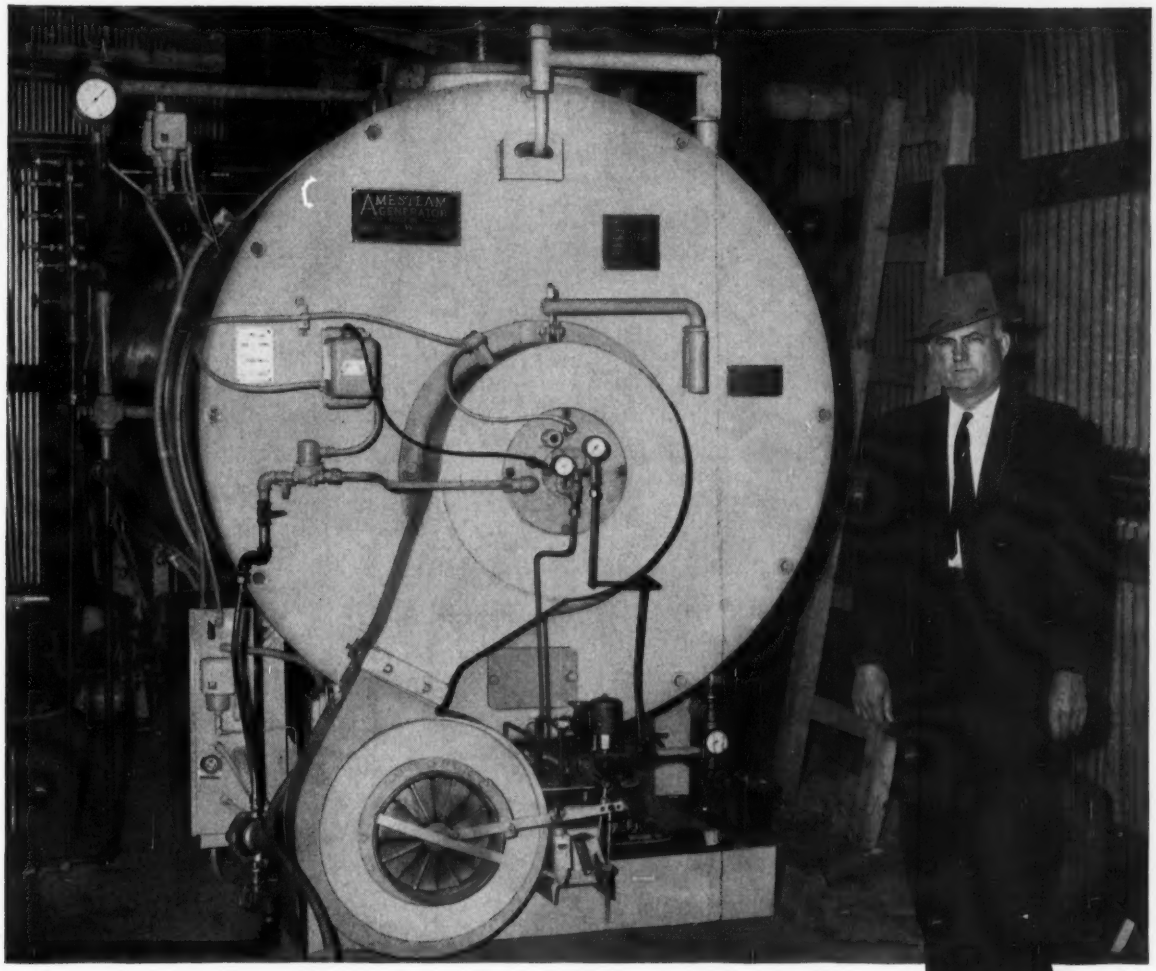
You can depend on HUBINGER *... fast shipment by rail ... prompt delivery by truck*



"We are well pleased with the 150 HP Amesteam Boiler we purchased from you," states C. W. Gearner, owner of Texas Creosoting Pole & Post, shown here with his Model AA Amesteam Generator, operating on $285 fuel cost per month as against $910 with the former boiler.

SAVING $625.00 A MONTH ON FUEL

...WITH THE NEW MODEL AA AMESTEAM GENERATOR

You can't argue with figures. This dramatic fuel saving enjoyed by *Texas Creosoting Pole & Post Co.* by switching to Amesteam Generator amply illustrates our claim of "lower operating costs" for the new Model AA Amesteam Generator. As owner C. W. Gearner states, "... we were using a 110 HP oil field type boiler, and our fuel cost was approximately $910.00 a month. The fuel cost on the Amesteam is approximately $285.00 monthly." Mr. Gearner estimates that the *fuel savings alone* will pay for the unit in twenty months!

If you are interested in fuel economy like this — and economies all down the line — in short, *lower cost steam* — you'll want to mail the coupon below and find all about this totally new Amesteam Generator!

AMES IRON WORKS INC.
OSWEGO, NEW YORK

AMES IRON WORKS • Box B-60, Oswego, N. Y.

Gentlemen:—Please send me further information on AMESTEAM GENERATORS and name of nearest representative.

NAME_____

COMPANY_____

ADDRESS_____

SERIES 40 GOBBLES UP EXTRA HEAVY CONDENSATE LOADS

This "thirsty" Yarway Impulse Steam Trap gives you all the well-known Yarway advantages like *quick heat-up, even temperatures, small size, good for all pressures, non-freezing*—PLUS the added feature of *huge capacity*.

For example, at 100 psig the ¾" size will handle 5600 lbs/hr; the 2½" size, 62,000 lbs/hr.

Specify the Yarway Series 40 Trap for applications on large autoclaves, cooking kettles, heat exchangers, heating coils and other places where loads are heavy.

Buy the Yarway Series 40 from your nearby Industrial Distributor—more than 270 stock and sell the Yarway line. Over 1,250,000 Yarway Impulse Steam Traps already sold.

YARNALL-WARING COMPANY
100 Mermaid Ave., Philadelphia 18, Pa.

SERIES 60—normal needs, pressures to 400 psi, 6 sizes. **SERIES 120**—normal needs, pressures to 600 psi, 6 sizes. **SERIES 40**—for extra heavy loads, 5 sizes. **NO. 30**—for extra light loads (½" only). **INTEGRAL STRAINER**—highest pressures and marine use, 6 sizes.

YARWAY® | *impulse® steam traps*

WHO'S BUILDING WHAT...

Monthly Report: Food firms to spend $16,324,387 for expansion.

Proposed Work

Borden Co., Point Pleasant, N. J., plant, $1,000,000.

Franklin Sugar Refining Co., Philadelphia, building additions, $150,000.

Imperial Sugar Co., Sugarland, Tex., quality control house, $500,000.

Thos J. Lipton, Inc., Flemington, N. J., plant, $1,000,000.

Oscar Mayer & Co., Houston, Tex., warehouse, $245,000.

National Biscuit Co., West Haven, Conn., warehouse, $250,000.

Northrup King & Co., Eldora, Ia., seed corn processing plant, $250,000.

Potato Service, Inc., Presque Isle, Me., potato processing plant, $1,100,000.

Quality Foods Cooperative, Inc., Lynchburg, Va., warehouse and office, $500,000.

Rogers Brothers Co., Rexburg, Ida., potato processing plant, $950,000.

Swift & Co., South Norfolk, Va., rebuild fertilizer plant, $125,000.

F. H. Vahising Co., Easton, Me., potato processing plant, $1,100,000.

Low Bids/Contracts

Canada Dry Bottling Co., Denver, plant, $350,000.

Central Oklahoma Milk Producers, Oklahoma City, bottling plant and office, $104,671.

Continental Baking Co., Denver, bakery plant, $1,000,000.

Dean Milk Co., Louisville, Ky., processing plant and office, $805,000.

Falstaff Brewing Corp., Galveston, Tex., brewery plant enlargement, $4,800,000; warehouse, $275,000; water system expansion, $61,000.

Glaser Beverages, Seattle, Wash., bottling plant, $1,250,000.

Hatfield Packing Co., Hatfield, Pa., meat packing plant addition, $125,000.

Leavenworth Fruit Co., Leavenworth, Wash., cold storage plant and packing facility, $183,716.

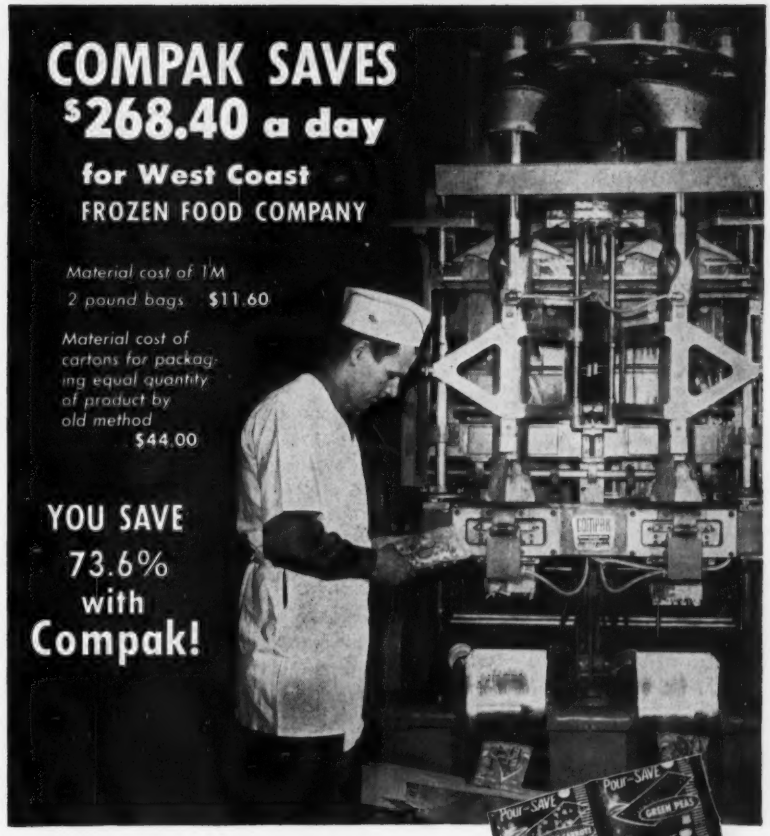
Pearce-Young-Angel Co., Greenville, S. C., frozen foods plant, $200,000.

COMPAK SAVES $268.40 a day for West Coast FROZEN FOOD COMPANY

Material cost of 1M 2 pound bags $11.60

Material cost of cartons for packaging equal quantity of product by old method $44.00

YOU SAVE 73.6% with Compak!



The new Pour and Save Poly Package used by Patterson Frozen Foods Company, Patterson, California, allows buyer to close package after using only a part of its contents. The package is formed from roll stock, filled and sealed on the Hayssen Compak Packaging Machine.

Join the progressive packers who are switching to new pour and save method of frozen food packaging. Get bigger sales — provide your product in this consumer-tested bag type package. It is costing 400% *more* to carton and overwrap your product than it will cost you to package it this new, better way. Get the facts from Hayssen. See how Compak saves floorspace, minimizes inventories, cuts down handling costs and gives you greater production economies. Call or write Hayssen today.

First in Automatic Packaging since 1910

HAYSSEN

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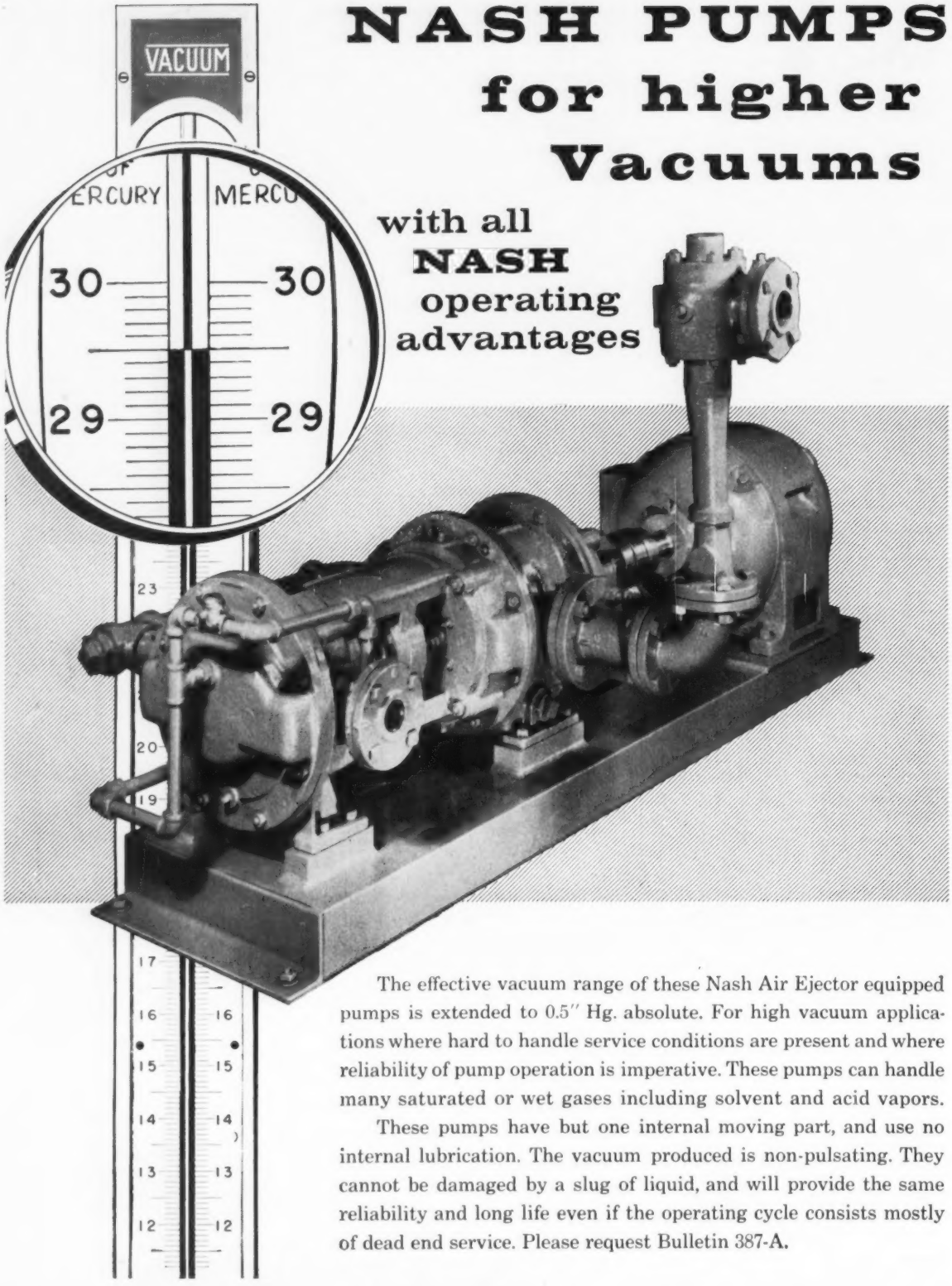
CIRCLE 17 ON READER SERVICE CARD

NASH PUMPS for higher Vacuums

with all **NASH** operating advantages



The effective vacuum range of these Nash Air Ejector equipped pumps is extended to 0.5" Hg. absolute. For high vacuum applications where hard to handle service conditions are present and where reliability of pump operation is imperative. These pumps can handle many saturated or wet gases including solvent and acid vapors.

These pumps have but one internal moving part, and use no internal lubrication. The vacuum produced is non-pulsating. They cannot be damaged by a slug of liquid, and will provide the same reliability and long life even if the operating cycle consists mostly of dead end service. Please request Bulletin 387-A.

NASH ENGINEERING COMPANY

SOUTH NORWALK, CONNECTICUT, U. S. A.

Photo courtesy of St. Petersburg Times

Handled with Clark ingenuity...and care!

Maybe you handle cartoned goods, or steel coils, or food in glass bottles, instead of rolls of paper. But the same important factor of *correct application engineering* is vital regardless of *what* you handle.

Take these paper rolls as an example. Industry needed a faster, safer, *damage-free* handling method. After a thorough study of all available techniques and equipment, Clark engineers developed the *ideal* paper roll clamp . . . one that provided every possible needed feature.

But Clark application engineering goes *beyond* special product design. It goes as far as specifically fitting the correct materials handling vehicle to your specific type of operation. It assures you of the right type of truck, in the correct capacity and power type, equipped with the right accessories and attachments. The end result is the ultimate in operating efficiency, at lowest possible cost.

We think we can help *you* through our application engineering. A call to your local Clark dealer (listed in the Yellow Pages) or a letter to the factory is all that's necessary to initiate action. If you care to write, address: Application Engineering, Clark Equipment Co., Battle Creek, Michigan.

CLARK EQUIPMENT

Printed in U.S.A.

For full details, circle 77 on reader service card

Staley's Quality
Improvement Pointers

Sweetose Syrup Enhances Natural Flavor... Brightens Appearance in Fruit Juice Drinks!

In jams and jellies . . .
Sweetose brings out true fruit flavor. Gives a brighter appearance and sheen.

In canned fruit sauces . . .
Sweetose holds appetizing color. Enhances that just-picked flavor with balanced sweetness.

There's no surer, more economical way to improve quality, appearance and flavor in your fruit juice drinks than with Sweetose, Staley's enzyme-converted corn syrup.

Crystal-clear Sweetose assures true *balanced sweetness*. Captures, blends and enhances the various tangy, natural flavors. Holds and brightens true fruit colors.

Investigate the many advantages Sweetose Syrup can bring to your operation. For more information on how you can improve the over-all quality of your fruit juice drinks at *decidedly lower* sweetener costs, see your Staley Representative or write:

A. E. Staley Mfg. Co., Decatur, Ill.

Sweetose®
THE ORIGINAL ENZYME-CONVERTED CORN SYRUP

BRANCH OFFICES: ATLANTA • BOSTON • CHICAGO • CLEVELAND • KANSAS CITY • NEW YORK • PHILADELPHIA • SAN FRANCISCO • ST. LOUIS

Chances for Key Bills; Some Due to Die

Push by Congress toward a hectic election-year adjournment means that a lot of unfinished business is going to stay unfinished. And appearing destined to be lost in the shuffle are some measures of particular interest to the food industry. Here's the outlook:

▶ **Color Additives:** Probable passage of a bill allowing FDA to set tolerances for colors as it does for other food additives, but likely with inclusion of a "no-cancer" clause.

▶ **Sugar Act:** Probable flat 1-yr. extension of present law as the easiest solution.

▶ **Poultry Stabilization:** Bill seeks to set up poultry and egg marketing programs. But it appears stalled in committee, with action unlikely.

▶ **Minimum Wage:** Possible increase from $1 to $1.15, with some extension to cover more retail workers. But final action doubtful at this writing.

▶ **Labeling Goods as to Country of Origin:** House-passed bill requiring identification of imports is popular—but is still full of complexities. Little chance is seen of Senate advancing the measure this session.

▶ **Tax Incentives for Overseas Investment:** So-called Boggs Bill is now re-shaped to ease levies on foreign setups deemed to be aiding specific underdeveloped countries. And if given the promised Administration push, it may now get under the wire.

Targets 'Rule of Reason' on Additives

The White House now has those key departmental reports on additive-law administration. And recommended is a special Ike-named "board of review."

Industry interests look to this board to exert strong influence in promoting a "rule of reason" in the handling of critical additive problems (see editorial, p. 29).

The board would consist of experts from FDA, the Cancer Institute, USDA, and National Academy of Scientists.

It's the scientists' recommendation that the board be allowed to exercise discretion to carry out the "intent of Congress" without causing unnecessary hardship to industry and consumer.

They note that scientists differ over methods of testing for carcinogens, what test results mean, and even what constitutes a carcinogen.

Flemming Stubborn on Cancer Clause

Continued argument of HEW Secretary Flemming is that there are neither economic nor health justifications for using cancer-questionable additives.

His stubborn stand, which is seen influencing the shaping of the color bill, may be gaged by his retorts when several scientists spoke for the discretionary approach in recent House hearings.

Four chemicals—an emulsifier used in bread, potassium arsenite, stilbestrol, and selenium—were cited by the savants as substances which could be considered free of hazard under established tolerances and practices.

Flemming's reply: There are plenty of substitutes for the specific bread emulsifier. Potassium arsenite is no longer used in connection with foods. Stilbestrol is important to only 1% of the poultry supply, so why risk it?

He agreed, however, that selenium (used in animal feed) should be allowed, because it is useful and leaves no residue in the meat. He is backing an amendment to permit feed additives that leave no residues.

'Mill' More Additives; No Bannings Yet

Now well along in FDA's checking mill is a sizable batch of "petitioned" additive substances—59 by spot count. Thus, there's progress in the meticulous winnowing of the big pile. (See latest tabulations, p. 85.)

What's more, no actual bannings have yet marred the record. But a couple of substances have been short-stopped.

One is safrole—a sassafras-root extract used by some makers of root beer, though not considered essential. It's been on the "suspect" list, and officials now are drafting an order to ban it.

Also, a questioned emulsifier used in pie toppings was withdrawn by the user, who found a ready substitute.

See Industry's Water Needs Doubling

Twice as much water will be required by the food industry in 1980. So predicts the Senate Select Committee on National Water Resources.

In round figures, water demand is seen making a two-decade jump from 590 up to 1,000 billion gal./yr.

Fouling of the nation's watercourses by discharges of wastes has an important bearing on the question. Now slated is a 3-day national conference on "Problems and Progress in Water Pollution Control." It will be convened by HEW in Washington on Dec. 12.

BRIEFS

FTC's newest anti-trust target is Continental Baking Co.—charged with possible monopoly in acquiring Omar, Inc., Southern California Baking Co., Smith Baking Co., Royal Baking Co., Braun Baking Co., DiCarlo's National Bakery, Rochester Bread Co., and Morton Packing Co. Further alleged are discriminatory rebates, price cuts to gain store entries, and payments for preferred display space. (For story on FTC's "economic concentration" report, see Marketing Signals, p. 111.)

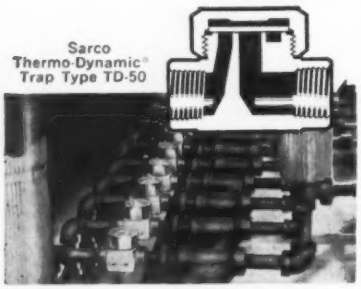
Better not figure on "going to court" if FDA omits from its GRAS lists a product you make or use. For a U. S. District Court has now set a precedent that this kind of question doesn't fall in the sphere of litigation. Decision came when Los Angeles Smoking & Curing Co. appealed from FDA's conclusion that employment of sodium nitrite on fish isn't "generally recognized as safe." The case was dismissed, with Lasco being advised to file a standard petition seeking procedural clearance.

Co-ops aren't wholly free of anti-trust laws. This became clear last month when the U. S. Supreme Court upheld the Justice Dept.'s case against Maryland & Virginia Milk Producers Assn., Inc. The co-op had acquired Embassy Dairy, leading Washington, D. C., independent, in a move challenged as monopolistic. It must now sell these assets.

SARCO

NOW...MATCH STEAM TRAPS

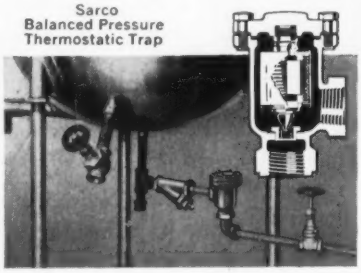
THERE'S no such thing as an all-purpose steam trap. That's why it pays to know what each trap has to offer. Here are five examples that demonstrate how you can match the correct steam trap type to the exact requirements of *each* application.



EXAMPLE 1: Outside Tracer Lines: A tough set of requirements

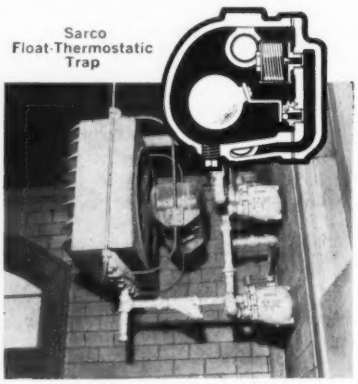
One of the most demanding sets of requirements a steam trap has to face is found in *outside steam tracing*. The trap must not only rid tracer lines of condensate and air immediately they're formed, but it must do so under exacting conditions. Pressures on each trap may vary widely. Installations may be remote and inaccessible to service. Water hammer may be a constant threat; freezing may be a hazard. Only the unique Thermo-Dynamic trap takes all these demands in stride. The Sarco TD-50 operates perfectly *without adjustment* through its full pressure range of 10-600 psi. It's virtually immune to water hammer and won't freeze when installed with a free discharge. Maintenance is, therefore, negligible. Compact, requiring no external support, the TD-50 is just about the easiest trap in the world to install. Once it's installed, you can forget it. You can count on an extremely long, trouble-free service life with minimum maintenance attention.

More closely than any other model, the TD-50 approximates an all-purpose trap. However, special application requirements might dictate the use of another type of Sarco trap. Sarco engineers stand ready to help you solve any trapping problems.



EXAMPLE 2: For steam jacketed process kettles: a trap that operates immediately on start-up and self adjusts to both low and high pressures

When a large steam-jacketed process kettle starts up, the condensate load is high, and all air in the jacket must be released quickly. At this stage, however, the jacket pressure is low; yet it builds up rapidly as the process continues. Because a SARCO No. 9 Balanced Pressure Thermostatic Trap is wide open on start-up, it releases initial air and condensate without the need for a bypass. And because it is self-adjusting, it works just as efficiently during the first processing stage when the jacket pressure is high. There are no seats to change for various working pressures. You can see why it is the obvious choice for steam jacketed process kettles.



EXAMPLE 3: How to prevent water-logging in unit heaters and blast coils

All unit heaters and blast coils have a relatively small internal volume in comparison with their steam condensing capacity. Even slight water-logging can reduce heat output seri-

Impartial advice on trapping because
ONLY SARCO MAKES ALL 5 STEAM TRAP TYPES

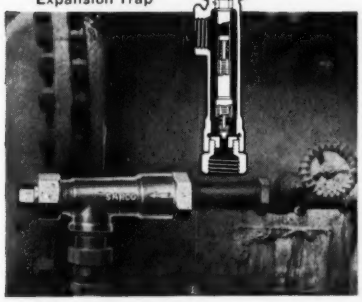
TOPICS

SARCO

TO YOUR TRAPPING NEEDS

ously. Pressures may vary widely under automatic temperature control and so may the load because of variable demand. A trap to handle this application must adjust itself instantly to pressure and load charges. The most precise answer to this problem is the SARCO Float and Thermostatic Trap—and here's why: it releases air on start-up and during running, and, because it discharges condensate continuously, it does not set up in the system violent pressure changes that would upset close control.

Sarco Liquid Expansion Trap



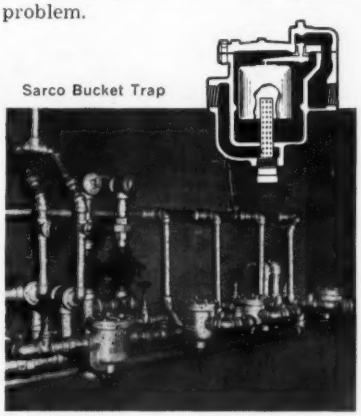
EXAMPLE 4: How to release low temperature condensate

When condensate cannot be returned to the boiler feed tank either because of distance or because it may be contaminated, it's economical to utilize some of the sensible heat as well as the latent heat of the steam.

For this purpose a trap must be capable of releasing condensate to temperatures as low as 100° F.

The sound trap selection here is the SARCO No. 871 Liquid Expansion Trap because it can be set to release condensate at temperatures down to 100° F. regardless of supply pressure. This performance assures maximum steam economy. The Sarco No. 871 handles the starting load easily because of its wide open valve, which throttles the flow as the condensate temperature rises. Furthermore waterhammer cannot reach the operating element. No other type is as nearly perfect for this specific problem.

Sarco Bucket Trap



EXAMPLE 5: Economic handling of Water Hammer and Corrosive Conditions

In applications in which water hammer or corrosive conditions are encountered but in which low pressures or extremely high back pressures preclude the use of the Thermo-Dynamic trap, the Sarco Inverted Bucket Trap is recommended. While the Sarco I. B. is not exactly a fuel miser, its relatively rugged construction will withstand considerable water hammer; and, when it is fitted with stainless steel internal parts, it offers excellent resistance to corrosion.

* * *

CONCLUSION: The right application is the economical installation

When you choose steam traps that serve their purpose without frequent adjustment, and without maintenance or replacement problems, you save on down-time, man-hours, spare parts, and production slowdowns.

You can get the money-saving solution to every trap selection problem by consulting Sarco. You get impartial solutions, because only Sarco makes all 5 types of steam traps: Thermo-Dynamic*, Thermostatic, Float Thermostatic, Liquid Expansion, and Bucket.

You also get the benefit of Sarco's 50 years of specialized experience in the manufacture and application of temperature regulators, industrial air vents, pipeline strainers, dial and industrial thermometers, heating and cooling controls, heat exchangers, heating control systems and heating specialties.

For literature or impartial help in solving your steam trapping or control problems, contact your local Sarco Sales Representative, or write direct to Sarco. 1440

*U.S. Pat. No. 2,817,353, T.M. Reg. U.S. Pat. Off.

SARCO COMPANY, INC.

635 Madison Avenue,
New York 22, N. Y.
Plant: Bethlehem, Pa.

NEW PACKAGES & PRODUCTS

Single Sheet Bags for Hams

Improved ham protection and reduced packaging labor costs are claimed for new single laminated bag, which replaces conventional three-sheet ham wrapping.

Glaze-Cote bags feature absorbent interior and glossy coated surface. Overall multicolor printing in stock or custom designs enhances p-o-p appeal.

Material is said to prevent weight loss. Cited are tests indicating that hams in conventional wraps lost 2.6% weight after 10 days storage, while hams in Glaze-Cote lost only .6%, a net saving of 12.4¢/ham.

Easy loading is added feature. Central States Paper & Bag Co. is supplier. **Circle 402 on Reader Service Card**

Flip-Lid Cans for Institutional Jams

Line of extra fancy L & S brand preserves, jellies, and apple butter, packed in "flip-lid" cans, is being introduced to institutional markets by Lutz & Schramm, Inc., Pittsburgh.

Containers are designed to provide easy opening and closing for busy institutional kitchens.

Cans range from 4-lb. size for apple butter to 4-lb. 12-oz. for jellies and preserves. They're packed 6/case.

Preserves included in pack are Strawberry, Seedless Blackberry, Peach, Grape, and Orange Marmalade.

Tins are produced by American Can Co.'s Canco Division. **Circle 403 on Reader Service Card**

Market Dough for Mexican Foods

To satisfy growing demand for Mexican foods, Quaker Oats Co. has introduced a 1-lb. package of Masa Harima, principal dough ingredient of "South-of-the-Border" type dishes.

"Masa" is the special kind of dough made from corn that has been soaked in lime water, washed, and ground, a slow process until development of Masa Harima.

With Quaker product, mere addition of water and thorough mixing provide masa for tortillas, tamales, tacos, enchiladas, and other Mexican dishes.

Product will be available through firm's 20 branch sales offices. Retail price of about 19¢ is suggested.

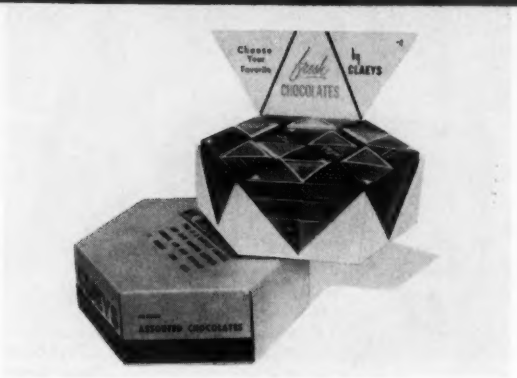
Bite-Size Frozen Ravioli

Frozen miniature ravioli is latest product development from Buitoni Foods Corp.

Trade-named "Raviol-ettes," entree consists of small, curly dough dumplings filled with meat. Ingredients include semolina, water, beef, pork, bread crumbs, salt, dehydrated eggs, butter, monosodium glutamate, spices, hydrolyzed plant protein, and garlic.

Package has white and green wax-coated overwrap, and features appetizing color picture of product in use. Cooking instructions are printed on reverse side.

Approximately 200 bite-size ravioli are contained in the 6¾-oz. package, which retails for about 49¢.



Hexagon for Trapezoids

Novel sales appeal is afforded with new hexagon-shaped shipping-display container for assorted chocolates from Claeys Candy Co., South Bend, Ind.

Four layers of eight trapezoid-shaped packages fit snugly in carton, supplied by Stone Container Corp. Zig-zag edge holds candy packages in neat stacks, and cover folds back for attractive back poster.

Case is quickly displayed by cutting tape around bottom and lifting cover.

Space-saving unit is white with red and blue printing. Individual packages are gold, white, and a third color identifying each variety. **Circle 404 on Reader Service Card**

Convenient Pull-Tab Shipping Case

New shipping case combines economy of end loading with convenience of top unloading.

Designed especially for cannery and similar uses, Fibre Zip has top panel that tears open quickly when pull-tab is yanked. Case may be reclosed and safely stacked even when only partially emptied.

Case markings remain clearly visible, since they are neither torn nor folded when carton is opened. Pull-tab area is marked for easy identification by retailers.

Maker, Fibreboard Paper Products Corp., San Francisco, states Fibre Zip is only slightly more costly than regular cannery cases. **Circle 405 on Reader Service Card**

Swirl Bottles for P-O-P Appeal

Attractive swirl-designed bottles, promoting point-of-purchase attention, are being used to package syrup, salad oil, cider vinegar, and distilled vinegar products from Lady's Choice Foods, Los Angeles and San Leandro.

Instant consumer acceptance is reported for new bottles, which require only minimum shelf-space and are easy to hold and pour.

Five sizes currently in use are 12-oz., pint, 24-oz., quart, and 40-oz. Labels have been redesigned to add to bottle's appeal. Supplier is Maywood Glass Co.

Circle 406 on Reader Service Card

White Monk Line Goes National

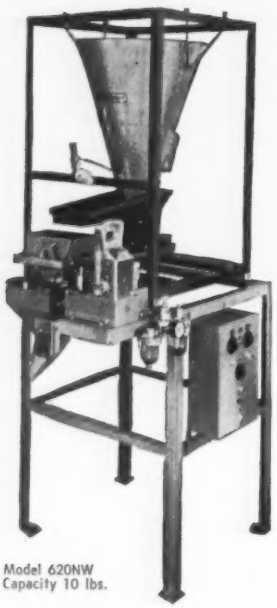
From the Cistercian Monastery at Okauchee, Wis., comes a complete line of canned vegetables for national distribution under the White Monk label.

Distributed locally for several years, these quality products comprise vegetables derived both from production and exchange of goods carried on by the religious order as a means of livelihood.

Included in the line are Early June Peas, Sweet Peas, Whole Kernal Corn, Cream Style Corn, Cut Green Beans, Cut Wax Beans, Tomatoes, and Tomato Juice.

Products are available in regular No. 303 cans or in institutional No. 10 sizes.

EXACT WEIGHT® Automatic Net Weighing Machines



Model 620NW
Capacity 10 lbs.

FOR PACKAGING, BAGGING, BATCHING, COMPOUNDING

Exact Weight offers:

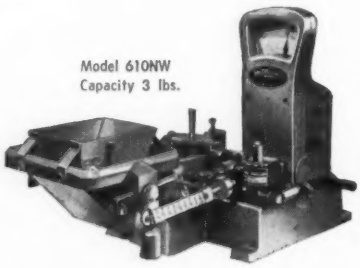
- Precision industrial-type scale
- Over-under indicator visual check eliminates need for separate checkweighing operation.
- Calibrated adjustments with counterweights of known value; graduated beam, poise and scale indicator.
- Design backed by 45 years of experience in specialized weighing equipment.
- Readily accessible service facilities.
- Performance guaranteed in writing.

Machine weighs and feeds dry, free-flowing materials. It weighs accurately and fast . . . eliminates guesswork . . . helps cut production costs. Write for Bulletin 3318 for details and specifications.

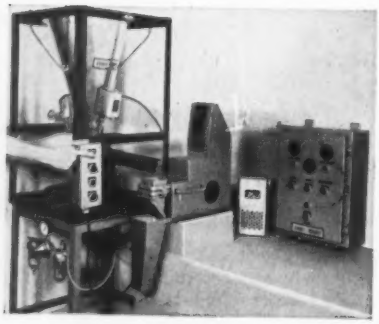
Automatic Net Weigher

Net weigher can be supplied without the feeder machine, support frame and discharge chute. The unit may be adaptable to your specific operation. Write for Bulletin 3311.

Model 610NW
Capacity 3 lbs.



Precision Automatic Net Weighing Machine



Model 4601 NW, left, for weighing dry products with accuracies of 1/10 gram on quantities below 10 grams and one percent accuracy on quantities of 10 grams and above. Combines a high-accuracy Shadograph Scale, air-operated dump mechanism, hoppers, vibratory feeders and photoelectric controls. Models with capacities from 50 grams to 500 grams. Write for Bulletin 3363.

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BETTER QUALITY CONTROL . . . BETTER COST CONTROL

MAGIC POTATO FRYS, cooked in only 3 sec., offer variety of uses as dip chips, party snacks, cocktail nibbles, hors d'oeuvres, etc. F. N. Burt Co., Buffalo, N. Y., produces these new spud flakes.

Packaging Briefs

"Vexar" Plastic Netting offers point-of-sales appeal to wide range of products, from oranges to aerosols. Du Pont Co. is supplier. (407)

Self-Service Films, Vitafilm F-10 cheese wrap and Vitafilm PW for produce, are offered by Goodyear Tire & Rubber Co. Maker says prices afford notable wrapping economies (408)

Metallized Glassine, supplied by Vaculite Corp., Hamilton, Ohio, is being used to package Mint Patties from New England Confectionery Co. (409)

Pressure-Sensitive Adhesive for foamed polystyrene and polyethylene—Polystix—is announced by Adhesive Products Corp., N.Y.C. (410)

High-Speed Corrugated Printing Process has been developed and tested by Packaging Corp. of America, Evanston, Ill. Technique aims for added merchandising appeal for corrugated packages. (411)

New Product Shorts

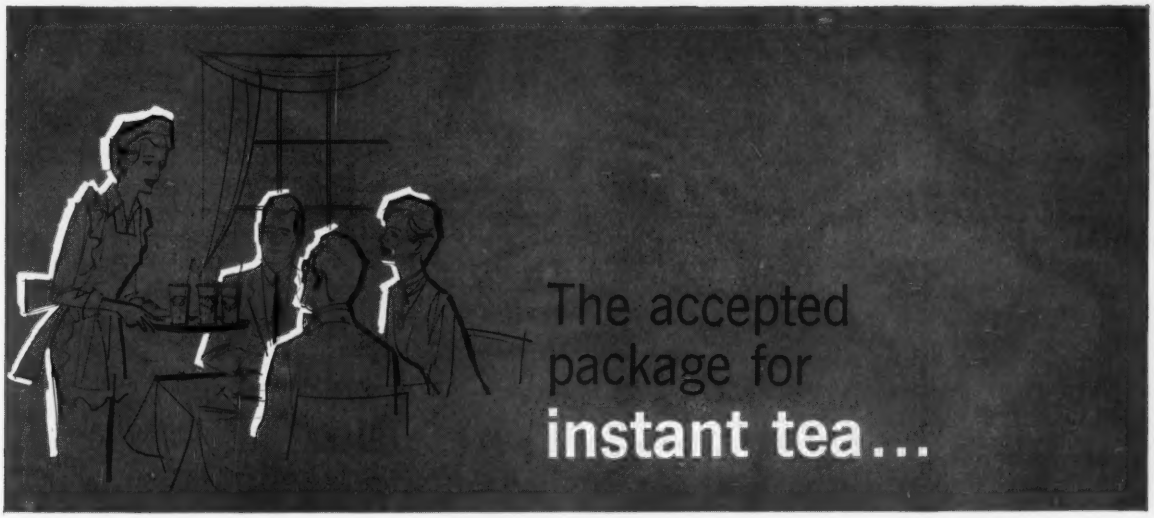
Lemon Fluff Frosting Mix is latest Betty Crocker item from General Mills.

Chicken Burgoo, old fashioned chicken stew, is being introduced in Southeastern markets by J. D. Jewell, Inc., Gainesville, Ga.

Noodles With Chicken is third product in Kraft Foods' dinner line.

Barbecue Bean line in 16-oz. cans is being test-marketed by Campbell Soup Co. in Albany, Oklahoma City, Spokane, and Cincinnati.

Pineapple Raspberry and Pineapple Strawberry frozen fruit drinks, from Libby, McNeill & Libby, are being backed by Indian-theme promotion and cash-refund offer.



...and now Tender Leaf BRAND uses

RIEGEL POUCHPAK®

Tenderleaf Instant Tea is protected with Riegel Pouchpak, run at high speed on Transwrap equipment

Riding the crest of popularity in restaurants and institutions, leading producers of instant soluble tea are making doubly sure of their package. The hygroscopic nature of the delicate ingredients requires the superior protection of Riegel Pouchpak, a special combination of pouch paper, aluminum foil and polyethylene coating. Pouchpak reliably prevents moisture absorption as well as loss of flavor or aroma.

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There's No Substitute for "Know How"...

. . . In the manufacture of *Clinton Products from corn* for use as ingredients for food applications

corn syrups • corn starches
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White House Report Takes Cancer Clause Apart

At last the famous cancer clause of the Food Additives Amendment of 1958 has been sensibly evaluated by an official agency. And logical steps have been proposed to solve the serious situation that stems from the unworkable provisions of the ill-advised Delaney clause.

We refer to a report issued by the White House on May 14—based on a study by the President's Science Advisory Committee. Approved by Dr. George B. Kistiakowsky—the President's special Assistant for Science & Technology—the findings were concurred in by USDA and HEW.

Points up many serious difficulties

While the panel subscribes to the intent of Congress in approving the clause to protect the public, it points up the difficulties and uncertainties involved in practical application of the clause.

Among these problems is that of recognizing a carcinogenic food additive. Further, the recognition of chemically induced cancer in man is based on circumstantial evidence. Since exposure to food additives is general throughout the population, it is unlikely that carcinogenic properties would be recognized from examination of data on man. Therefore, reliance must be placed on observations made on laboratory animals.

What's more, criteria for defining whether a "cancer" has been induced are varied. And there is a difference of opinion as to the possible subsequent malignancy of at least certain benign tumors.

Uncertainties also are involved in proper planning of experiments—and in the relation of dose to cancer causation in man. Then the observation is made that traces of chemicals—which in larger amounts are generally accepted as carcinogenic—are found in some natural foodstuffs.

In light of these and other factors, the report comes to some significant conclusions:

Comes to significant conclusions

1. FDA must employ the "rule of reason," based on scientific judgment, to carry out the intent of Congress and protect the public.
2. Definition of a carcinogen requires discretion in its interpretation because so many variables are involved. And the problem is accentuated by the limited amount of scientific information available.
3. Administrative discretion must be based on the most informed scientific advice available.

As a result of these conclusions, highly important recommendations were made:

1. That the Secretary of HEW appoint an advisory board to assist in evaluating scientific evidence used in making decisions.
2. That appropriate modification of the law be sought if existing legislation does not permit the Secretary to exercise discretion.
3. That greater emphasis be placed by government agencies on the study of carcinogens in an attempt to define dose-response relations.
4. That research be expanded by USDA, State Agricultural Experiment Stations, and industry to discover additional safe additives.

This report constitutes a well-conceived blueprint for easing the additives situation. Certainly HEW and industry should take it most seriously. And both should work to modify the cancer clause, to make it workable—and quickly.

LOOKING FOR A LOW-COST APPROACH TO MAINTENANCE PAINTING?

Lou Oyster's an old-timer in the field of maintenance painting. A member of Du Pont's special Technical Service Group, Lou's an expert whose aim it is to help you solve maintenance painting problems of every type and size. As he sees it:

"To make sure you realize maximum returns on every maintenance dollar spent for paints and painting, think in terms of *CPSFPY*—cost per square foot per year—rather than cost per gallon. *CPSFPY*—Du Pont's approach to paint maintenance—brings in two additional factors of equal importance: *service* and *job satisfaction*.

"You see, when you specify Du Pont, you're getting a complete paint *system*, specifically geared to your needs. Naturally, we start with the finest finishes available—like our Mildew-Resistant Enamel, for instance. This tough, durable finish effectively resists mildew formation and stays bright for years. Like all Du Pont Maintenance Paints, it's pre-tested to assure dependable performance.

"Teamed with top-quality paints is what we call technical assistance. This means going right into your plant to analyze the problem at firsthand. Once done, we can sit down with your engineers and plant supervisors and draw up a sound, workable program that considers both maintenance and budgetary requirements. Service like this helps you achieve efficient, long-range protection, *at lowest cost per square foot per year*."

There are men like Lou Oyster working out of Du Pont district sales offices from coast to coast. Why not let one of them put his training and experience to work for you? Give him a call, or write: E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Dept. FE-66, Wilmington 98, Delaware.

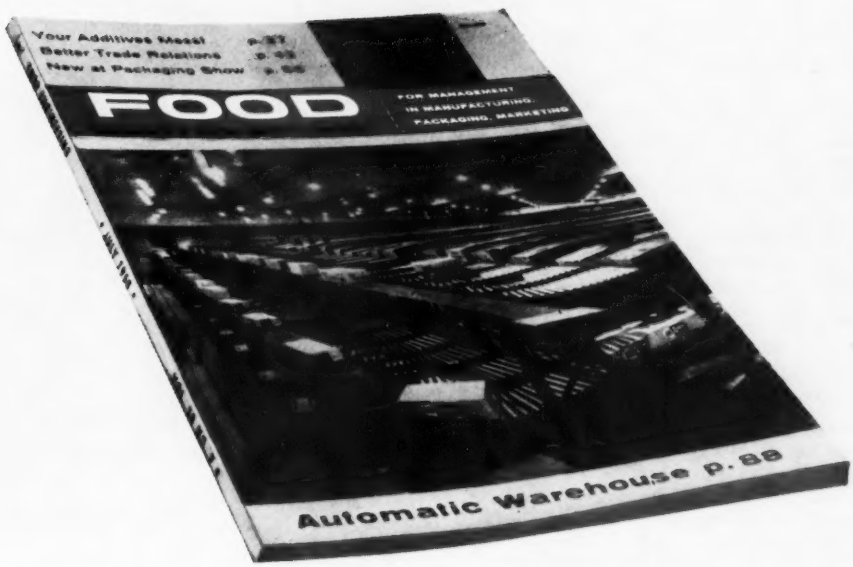
* * *

Lou Oyster has had more than 30 years' experience with Du Pont's Finishes Division. His diverse background in the field of maintenance painting includes extensive experience in mildew control, sanitation and corrosion problems for the dairy, meat-packing, cereal, chemical, petroleum and paper industries in the South and Midwest.

DU PONT PAINTS

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*



Why did we buy it?

Why, we bought it for you, of course!

As you may have heard, Chilton is the new publisher of FOOD Engineering. Since you have invested your time and money and loyalty in this publication, we feel we owe you an explanation. Why did we buy FOOD Engineering? We really bought it for you. And that's a good, hardheaded, selfish reason. Because if it's good for you, it's good for Chilton...

1. FOOD Engineering is, and has been for some years, the leading publication in its field.

2. It has always been published and edited to the highest standards, and we are proud to have it a Chilton publication.

3. It covers a field which is basic, huge and certain to grow even larger.

4. It is completely non-competitive with any other Chilton publication.

5. The Publisher, Editor, and other key members of the staff are coming with it, and will be welcome additions to the Chilton staff.

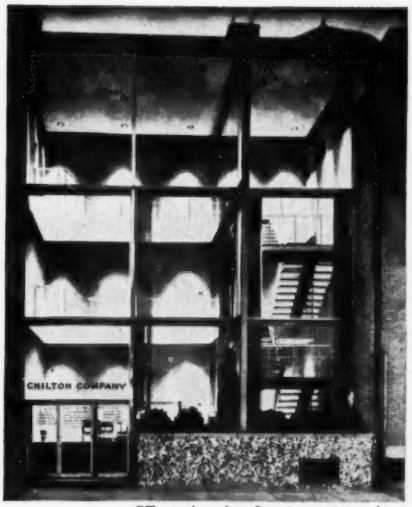
6. It fits perfectly into our whole picture, and is a logical step in our expansion program.

P.S. Everything's been going so smoothly in this transaction, we almost forgot to tell you that we begin (or continue?) publishing FOOD Engineering with the July issue. Effective immediately, please address all correspondence, subscriptions, renewals to *FOOD Engineering, A Chilton Publication, Chestnut & 56th Sts., Philadelphia 39, Pa.*

If it's good for you, it's good for Chilton

It keeps you in step with changing market conditions.

Food management men read it, prefer it.



FE's new front door. Come in, any time, and get acquainted with Chilton's people.

Editor Frank Lawler, Publisher "Bud" Riddell talk FE's bright future.

LEADER IN ITS FIELD . . . 32-year pioneer all-food industry publication, preferred by management men like yourself. Look for Chilton's modern circulation practices to build quality on quality. You want this a forum of the field's leaders. So do we.

HIGHEST EDITORIAL STANDARDS... FOOD Engineering has led the way for better management methods, improved production and engineering techniques, packaging-at-a-profit and, more recently, marketing as it affects the job of every food plant manager. McGraw-Hill's editorial standards are as impeccable as Chilton's. Nothing less is good enough for you.

HUGE, BASIC, GROWING MARKET... Ask your wife. The nation's food bill last year passed $70 billion ($54.7 billion at mfg. level). 1960 outlook . . . sales up 5.5%, profits up 7.5%, new plant and capital spending up 6%. Over 42,000 (U.S. Census) plants, an estimated 100,000 food company units. Watch Chilton's M-A-P (Marketing Assistance Program) grab hold of your industry's vital statistics . . . for the use of yourself and your associates, and to help your suppliers serve you still better.

COMPLETELY NON-COMPETITIVE... Today Chilton's 17 topflight publications deliver diversified, consequential markets, serve reading and buying interests ranging from automotive parts to zoomar lenses. Alphabetically, FOOD Engineering tucks in nicely right between *Electronic Industries* and *Gas*. Industrially, it means Chilton moves into another major market for you with its sights set to give you a medium of the stature of *The Iron Age* or *Automotive Industries* in their respective fields. It broadens our scope, enhances our editorial "intelligence", enlivens inter-company exchange of publishing ideas. It couldn't be more compatible — for you or for us.

KEY STAFF UNCHANGED . . . Grahame Riddell, present FOOD Engineering publisher, leads the parade to 56th and Chestnut, along with Editor Frank Lawler, who is already planning improvements and refinements in content. FE's reporter-writer specialists in technical-engineering, production, packaging, marketing, as well as other folks you know, and who know you . . . they're aboard. What a superior staff we have to build on!

ANOTHER "RIGHT STEP" FORWARD . . . For the past 5 years, as you know, Chilton has pursued a forward-looking development program, marked by the addition or creation of such excellent publications as *Aircraft & Missiles, Butane-Propane News, Electronic Industries, Product Design & Development,* as well as the expansion of facilities of its established properties. This is reflected in the vastly increased number of readers we now serve, and new and welcome editorial responsibilities. And, significantly, in our corporate good health. We want you to feel, as we do, that FOOD Engineering couldn't be in better hands.

Chilton

COMPANY Chestnut and 56th Streets Philadelphia 39, Pennsylvania

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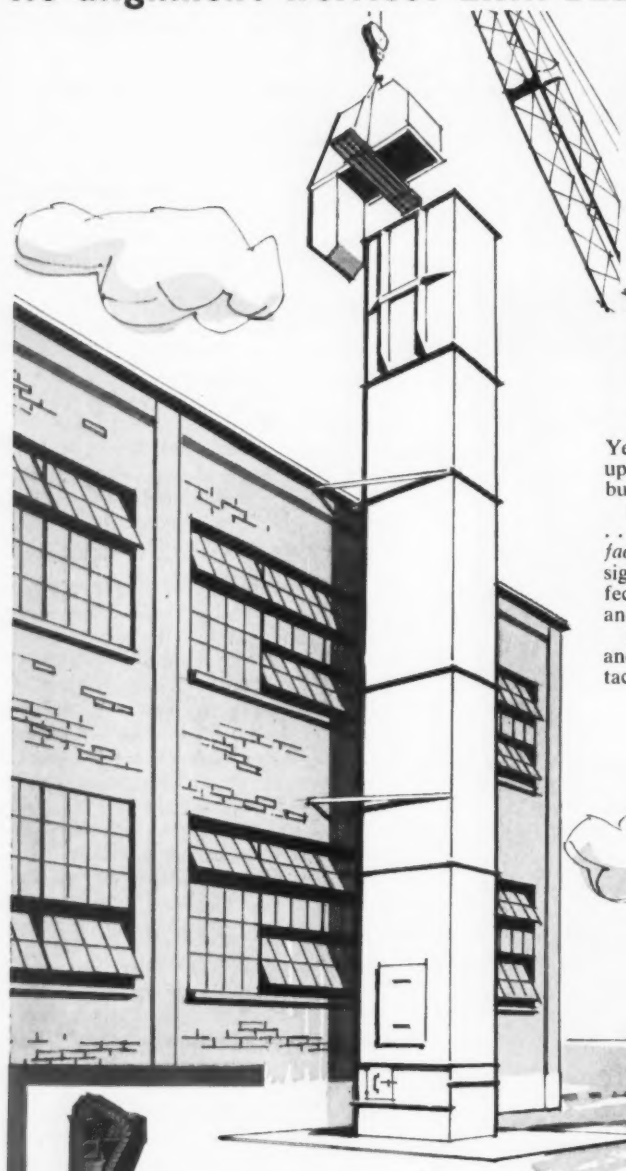
No alignment worries! LINK-BELT bucket elevators go

straight up... fast and easy



Factory-aligned components assure low-cost installation, smooth performance

Yes, Link-Belt bucket elevators go up easy . . . and they go up *straight!* There's no misalignment to cause inefficiency, bucket and casing wear.

Link-Belt manufactures *all* bucket elevator components . . . eliminates installation and operational problems in the *factory*, not in the field! All components are carefully designed and manufactured. Casings are jig-welded for perfect, ready alignment. Result: Unnecessary erection costs and difficulties are avoided, long-lasting efficiency assured.

Link-Belt will gladly erect your elevator (large or small) and accept full installation responsibility. For details, contact your nearest Link-Belt office. 15,307-A

INTERNAL DISCHARGE bucket elevator provides an excellent means for the continuous, gentle handling of foodstuff. Double head shafts, operating in fixed bearings, provide a longer interval for bucket discharge.

Link-Belt's complete bucket elevator line includes 14 types in 4 basic designs . . . centrifugal, positive, continuous and internal discharge. Also a wide variety of buckets . . . steel, malleable iron, Promal or alloy metals.

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BUCKET ELEVATORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses and District Sales Offices in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

Employee Gift Matching

Another Good Way To Help Our Colleges And Universities

The business community continues to make an impressive record in giving badly needed financial help to our colleges and universities. This year the Council for Financial Aid to Education expects that business contributions to higher education will be well over four times their total of about $40 million a decade ago.

If these contributions, which were about $150 million last year, continue to increase at the present rate, they will hit the target of $500 million set for business aid to our colleges and universities in 1970. This is the amount which, the Council calculates, must come from business if these institutions are to have the money to do their job properly a decade hence.

However, it would be a fine thing both for the nation and the business community if that $500 million dollar target were hit well before 1970. This would put us ahead of a schedule (it is a conservative schedule) in getting on top of what remains one of the nation's most crucial problems—that of having its colleges and universities adequately financed which they are very far from being right now.

There is, we believe, one quite simple way by which financial support for higher education by business firms might be considerably speeded up. All that is required is that business firms generally abandon the idea that it is possible for every company to have a program to provide such support that is novel and distinctive, and that this is the only way that interests of prestige and good public relations can be served.

There are nowhere near enough good plans to provide financial help for higher education to equip even a small percentage of our business firms with one that is novel and distinctive. Also **there are a number of very good plans which, so far as we can tell, lose nothing of their value for prestige and good public relations by being used by a large number of companies.**

The Gift Matching Idea

One plan with these attractive characteristics is the plan by which companies match the gifts of their employees to colleges and universities, and now increasingly gifts to independent secondary schools. So far as we can discover the general plan was invented by the General Electric Company, with what it calls its Corporate Alumnus Program. Now, with variations on the same basic design, almost 100 companies have gift matching plans. We at McGraw-Hill are included in this number.

The gift matching plans vary considerably in detail. Some are limited to alumni of the schools to be benefited. In others any employee can participate by making a gift to an eligible institution. There are also variations in the maximum amounts of gifts by individuals and to individual institutions which will be matched. Some companies have "open end" plans; others limit the total to be matched in any one year. All of the plans, however, embody the same central gift matching idea.

When the plan was first launched some college administrators of little faith in the fundamental generosity of the alumni and friends of their schools expressed the fear that if gifts were to be matched they might be made smaller in the first place. The opposing view was that the possibility of having them matched would stimulate more and larger gifts.

Advantages Of Gift Matching

So far as we have been able to discover, the expectation that giving would be stimulated by gift matching has been validated by the experience with the plans. This has been our experience at McGraw-Hill. Some other important virtues of the gift matching programs have been summarized by

LEADERS OF SOME OF THE INSTITUTIONS WHICH HAVE SHARED IN THE McGRAW-HILL EMPLOYEE GIFT MATCHING PROGRAM EXPRESS THEIR VIEWS

"We particularly appreciate the fact that your grant is unrestricted, and can therefore be used for our area of greatest continuing need — the General Education Fund, from which faculty salaries come."

W. Boyd Alexander, Vice President and Dean of the Faculty
Antioch College

"We are grateful, not only for the financial support given to The Cooper Union by your company, but also for the stimulus it has provided our alumni in your employ to make annual gifts to their Alma Mater."

Edwin S. Burdell, President
The Cooper Union

"The gift matching program has a dual advantage. First, it acknowledges and repays a debt of honor to those colleges which, often at great loss to themselves, have trained and educated the men who are now among your personnel. This is most fair and equitable. Secondly, by offering to match up to a given limit the contributions of alumni, you encourage support of their own colleges on the part of graduates, who themselves are so indebted."

President Edward B. Bunn, S. J.
Georgetown University

"Thanks to your doubling of the annual gifts of one of our generous and loyal friends who works with you at McGraw-Hill, we are well on the way toward creating what for us will be an extremely helpful scholarship fund. This would not have been possible without the gift matching program."

C. Adrian Heaton, President
California Baptist Theological Seminary

Ernest T. Stewart, Executive Director of the American Alumni Council (1785 Massachusetts Avenue, N.W., Washington, D.C.) who would be glad to provide detailed information about them, and the names of companies having such plans. Of the gift matching idea he says,

> "*First*—it assures the corporation that its gifts go direct to those colleges and universities which have furnished it with trained manpower.
>
> "*Second*—it places responsibilities for the gifts on the institutions themselves and drives home the point that they must make a real effort with their own alumni.
>
> "*Third*—it leaves the final decision of corporate support basically to the employees."

For many companies which are fearful of complicating their relations with their customers by courting charges of favoritism if they provide direct financial support for any particular school or group of schools, this latter consideration can be of decisive importance.

The gift matching plan also has what for many companies is the very important virtue of being simply and easily administered. Some additional virtues of the gift matching plan, as seen by officers of institutions which have been beneficiaries, are indicated in the box at the top of this page.

Effective And Easily Managed

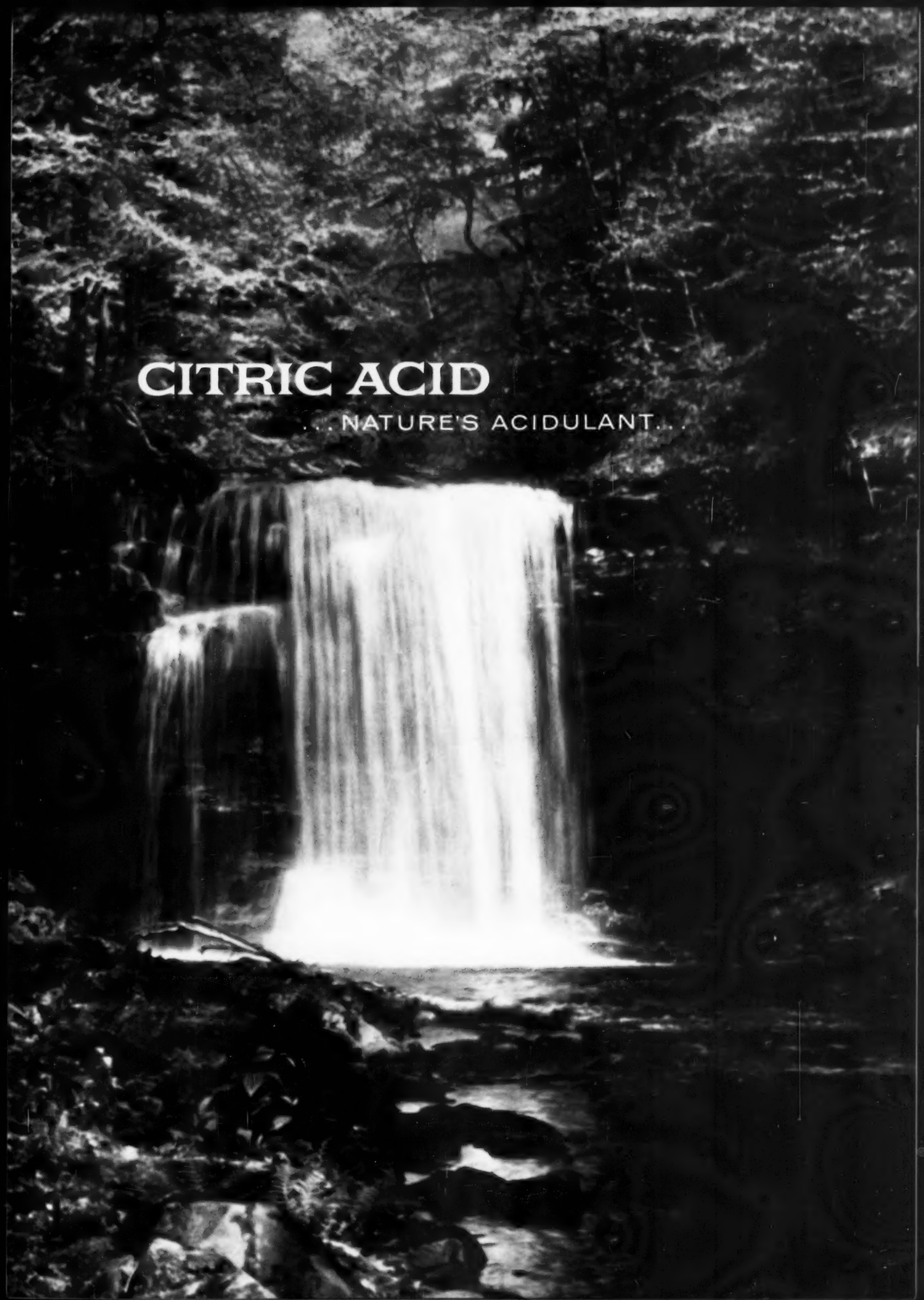
We at McGraw-Hill are well pleased with our gift matching program. It is a broad program in which all employees and a wide array of colleges and universities, both privately and publicly supported, are eligible to participate. We commend it as an effective and easily managed plan to provide urgently needed financial aid to higher education.

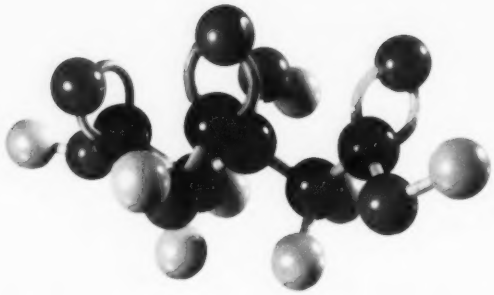
We also urge that business firms adopt this or one of a number of other very good programs of financial aid to higher education* rather than delay in the hope of hitting upon some quite new and distinctive plan. There are very long odds that such delay will prove unavailing. In the meantime our colleges will be losing financial help which it is profoundly in the interest of the business community and the nation to see that they get—and get fast.

*An earlier editorial in this series dealt with tuition supplements as another good way to help our colleges and universities. Reprints of this editorial are available. So are copies of a "more or less socratic dialog," entitled, **A Business Wrestling with the Problem of Aid to Colleges and Universities.** It was prompted by the efforts of McGraw-Hill to find suitable methods of providing financial aid to higher education.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C. McGraw
PRESIDENT
McGRAW-HILL PUBLISHING COMPANY, INC.


CITRIC ACID
. . . NATURE'S ACIDULANT . . .



Pfizer

CITRIC ACID

Nature's Acidulant

best for your fruit-flavored foods

So many fresh fruits get "tanginess" naturally from citric acid! This is nature's way of bringing out their full flavor.

Exactly the same kind of tanginess is insured in your fruit-flavored soft drinks, candies, jellies and many other products—by Pfizer Citric Acid.

Indeed, Pfizer Citric Acid has been a key product to the food industry for many years. The words "citric acid" on countless labels have established it as a familiar and trusted ingredient.

Don't gamble on quality and consumer acceptance with anything less than nature's acidulant—citric acid!

How Pfizer Pioneered in Production of Citric Acid in America

While the advantages of citric acid as a food ingredient have long been appreciated, the supply was at one time quite limited. Up until 1880, virtually all the citric acid used in this country was made in Europe. In that year, Pfizer conceived the idea of importing the raw materials from abroad and producing citric acid in the United States. The results were successful and Pfizer gradually became a leading manufacturer of this important commodity.

But production still depended on raw materials supplied from overseas. In a far-sighted decision around the turn of the century, Pfizer began to experiment with methods of producing citric acid from domestic materials. In 1914, this research program focused on the possibility of fermenting citric acid from a sucrose base. Five years later, Pfizer opened a pilot plant employing such a process.

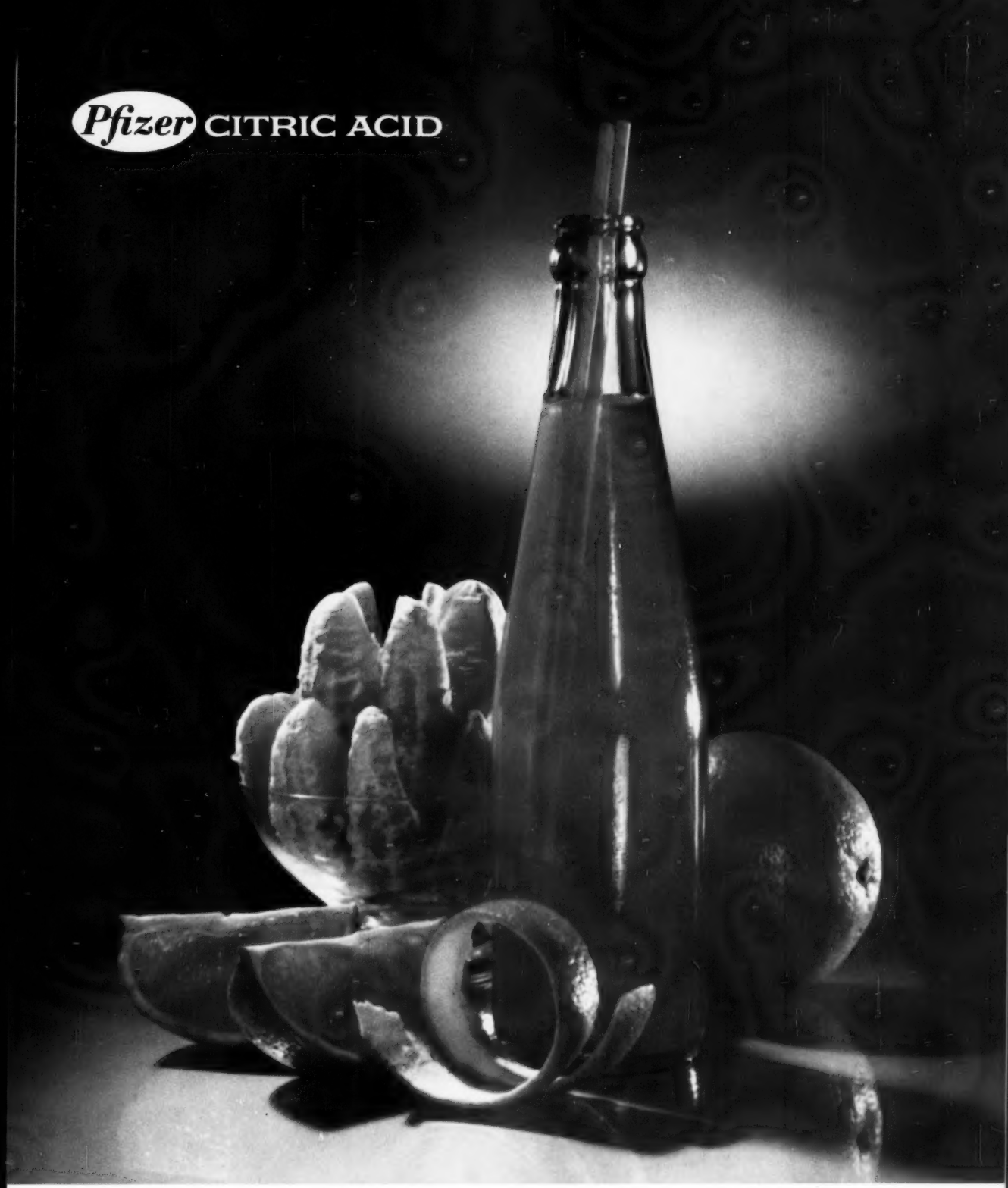
By 1923 the company was convinced that it had really found the formula for producing citric acid of the highest quality on an economical basis. A commercial production plant was put into operation and in 1924 American industry was receiving regular deliveries.

The Pfizer fermentation process proved so efficient that by 1939 the price of citric acid had been reduced to ¼ the pre-World War I price!

The American food industry was thus assured a readily available supply of economical citric acid from a dependable domestic source.

In addition, by enlisting the assistance of the Pfizer Technical Service staff, customers have shared in Pfizer's extensive knowledge of citric acid and effected sizeable time and money savings in product development and improvement.

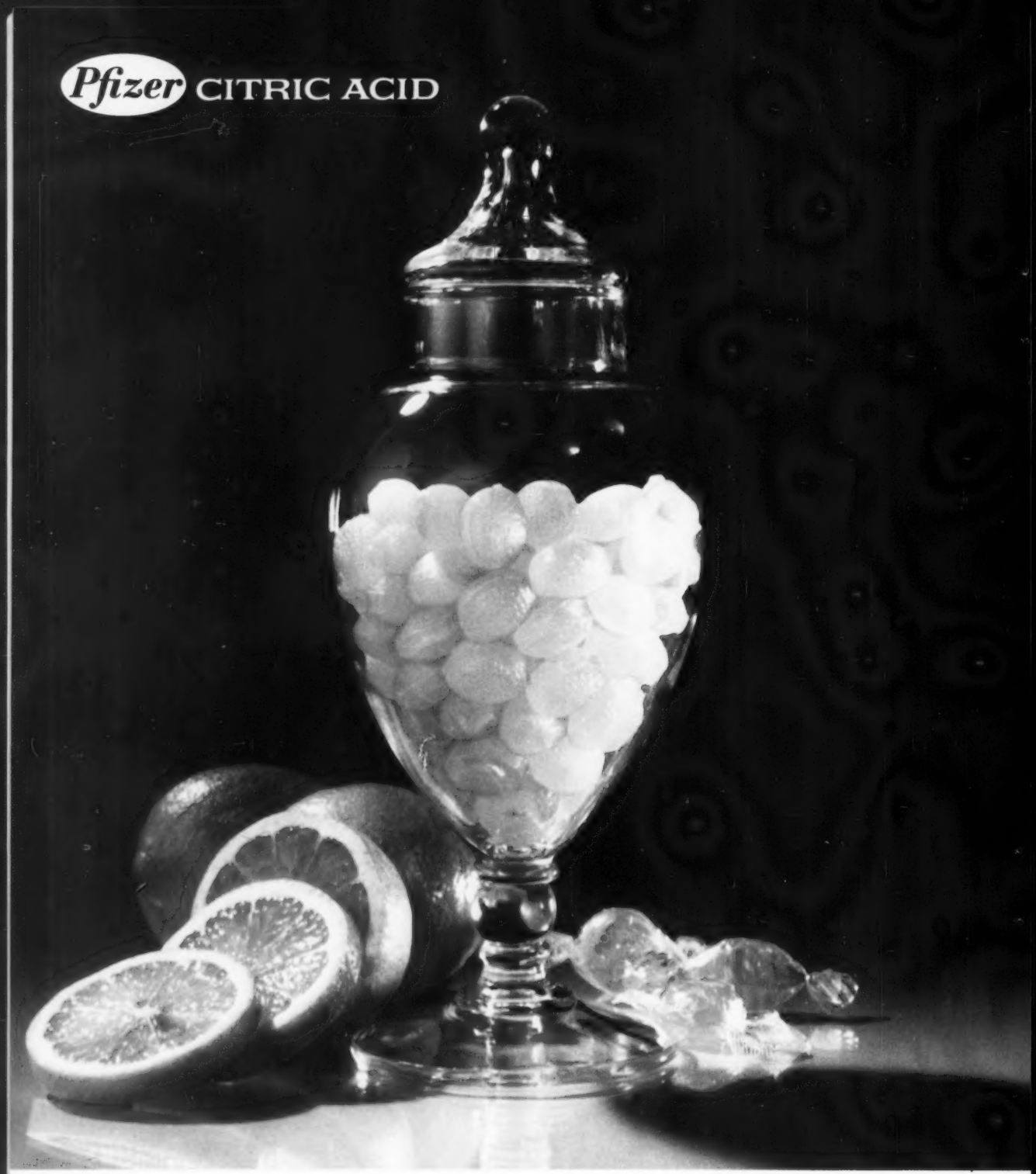
You will see on the pages that follow some of the products in which this versatile acidulant serves as a key ingredient—ample evidence of the importance of citric acid in today's food industry!



Nature's Acidulant

TRADITIONALLY BEST FOR SOFT DRINKS

Citric acid gives soft drinks an authentic, natural tanginess!

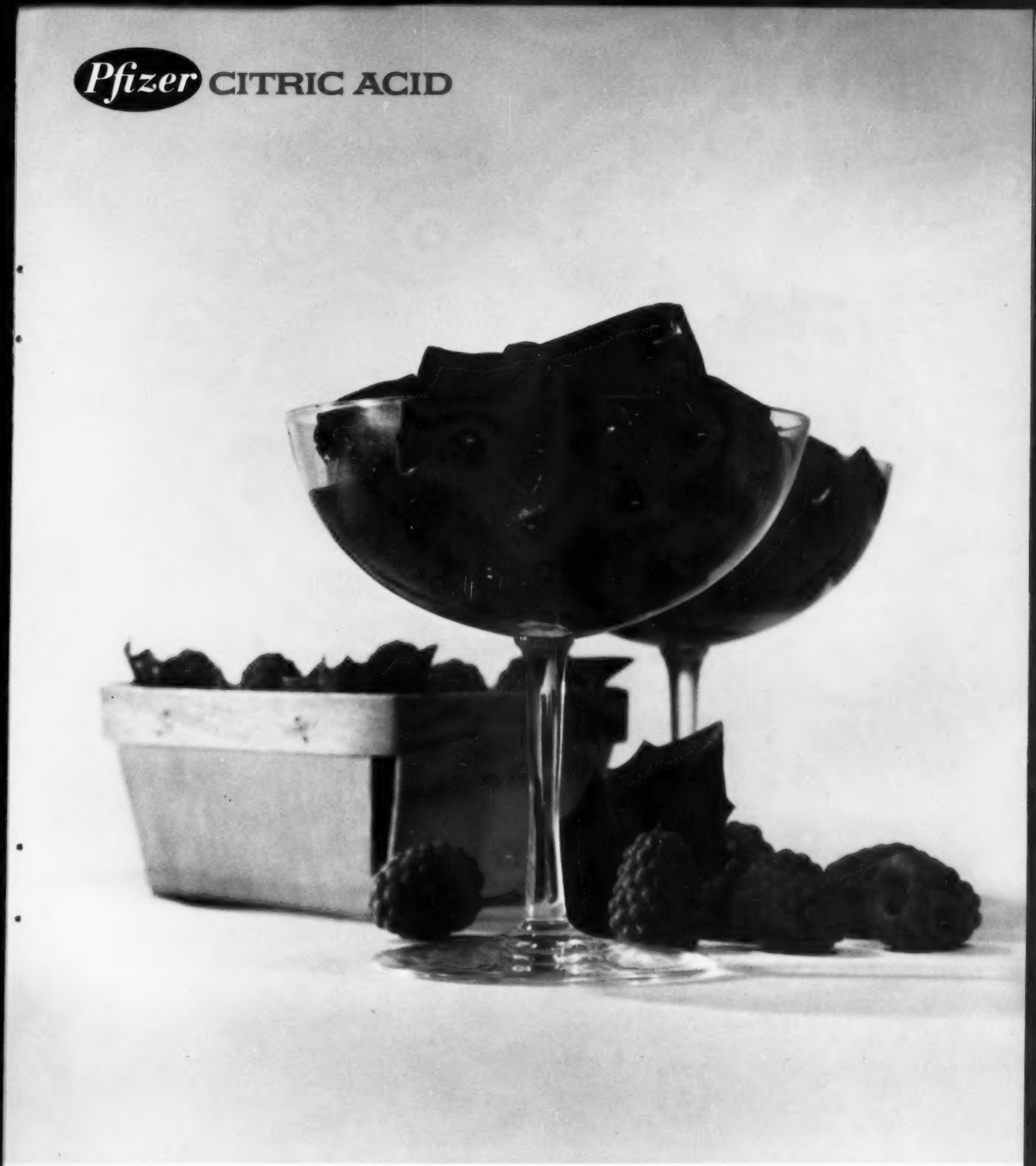


Nature's Acidulant

TRADITIONALLY BEST FOR CANDIES

Citric acid is the acidulant you'll use with absolute confidence!

Pfizer CITRIC ACID



Nature's Acidulant

TRADITIONALLY BEST FOR FRUIT-FLAVORED DESSERTS

Citric acid gives fruit-flavored desserts that natural tartness!

Pfizer CITRIC ACID

Nature's Acidulant

TRADITIONALLY BEST FOR ICES AND SHERBETS

Citric acid's flavor-benefit is that "little extra" so important to true fruit taste!

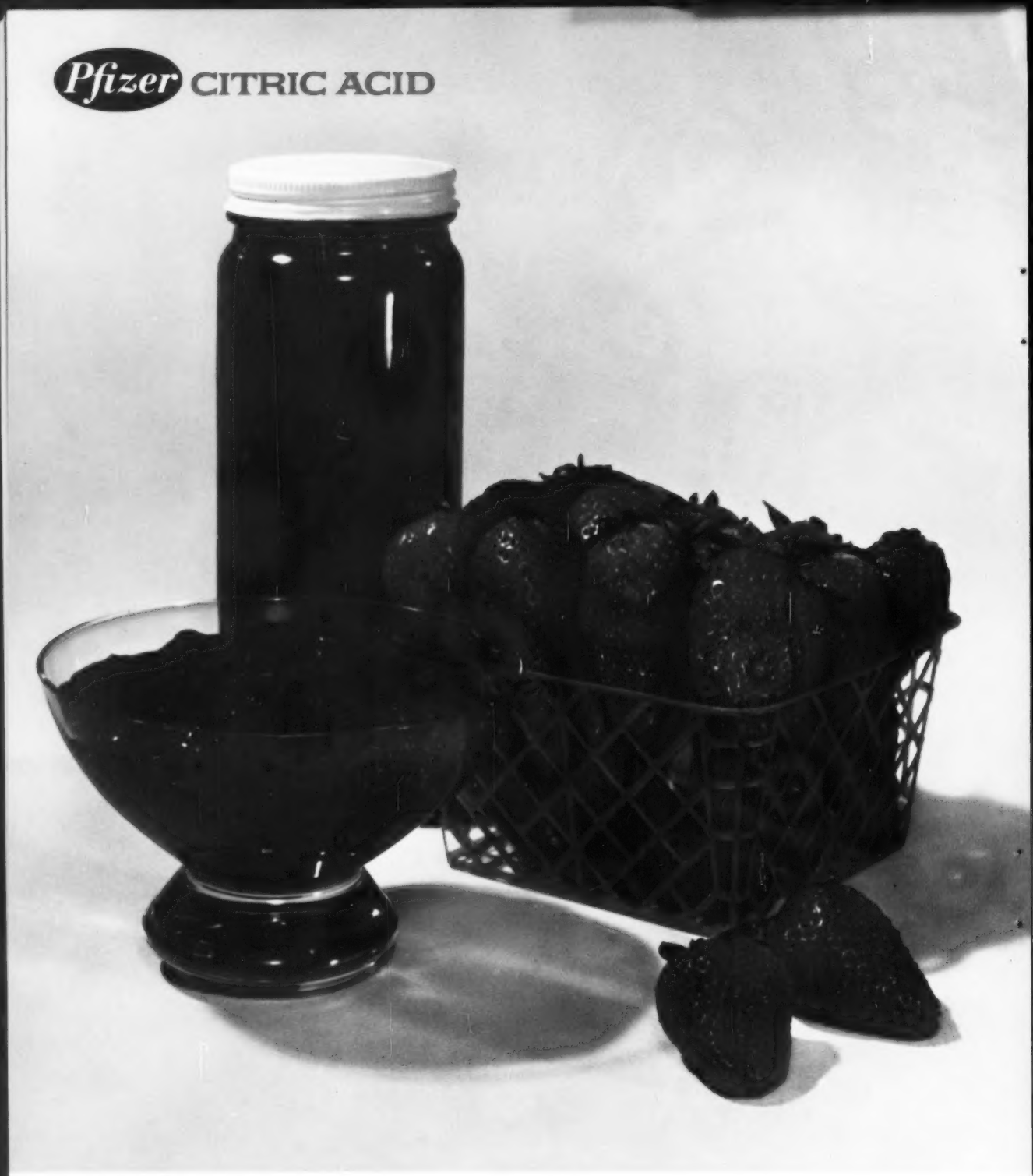
Pfizer CITRIC ACID

Nature's Acidulant

TRADITIONALLY BEST FOR CANNED FRUIT JUICE BLENDS

Citric acid gives a natural "lift" to real-fruit flavors!

Pfizer CITRIC ACID



Nature's Acidulant

TRADITIONALLY BEST FOR FRUIT PRESERVES

Citric acid helps bring out the tart-sweet goodness of fresh fruit!

Pfizer CITRIC ACID

Nature's Acidulant

TRADITIONALLY BEST FOR BEVERAGE POWDERS

Citric acid adds the tanginess that contributes to full, rich flavor!

Pfizer CITRIC ACID

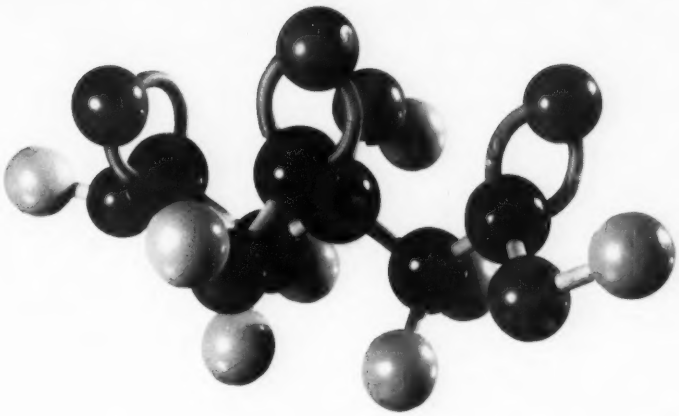
WHERE YOU MAY BE USING CITRIC ACID TOMORROW

In the future, uses for citric acid will extend beyond the area of fruit-flavored products. One area where citric acid may soon prove important is vegetables, particularly canned vegetables.

Small amounts of citric acid help control the pH level in canned tomatoes, beans, carrots and asparagus. Experiments in canned, whole tomatoes indicate that by controlling the pH with citric acid it may be possible to reduce processing time and/or temperature, resulting in a firmer whole tomato.

It has also been shown that citric acid sequesters trace metal contaminants in the pack, thus contributing to the quality of canned vegetables.

Pfizer, world's leading producer of citric acid, will continue to keep you informed on valuable new developments concerning citric acid—nature's acidulant.



Pfizer

CITRIC ACID

TECHNICAL INFORMATION

Pfizer offers citric acid in two basic forms—anhydrous and hydrous

CITRIC ACID, U.S.P., ANHYDROUS

This is produced as colorless, translucent crystals or as a pure white powder. It is odorless and has an acid taste. The compound is stable in the presence of light and air and resists caking under normal storage conditions. Because there is no water of crystallization present, anhydrous citric acid is particularly economical. Its reduced bulk leads to lower costs for handling, shipping, and storage. Furthermore, the lack of water of crystallization assures you of a uniform product and permits exact quality control.

CITRIC ACID, U.S.P., HYDROUS

This form of citric acid has been available for many, many years and is still counted on as a high quality acidulant for a wide variety of products. In physical appearance, taste and odor, it is similar to the anhydrous compound. However, it contains 1 mol water of crystallization (8.58% moisture). Stable in the presence of light and air, it will tend to lose water at high temperatures or in a dry atmosphere.

Various salts and esters of citric acid also find widespread application in the food industry. Two of the more prominent, sodium citrate and Citroflex® A-4, are described below.

SODIUM CITRATE

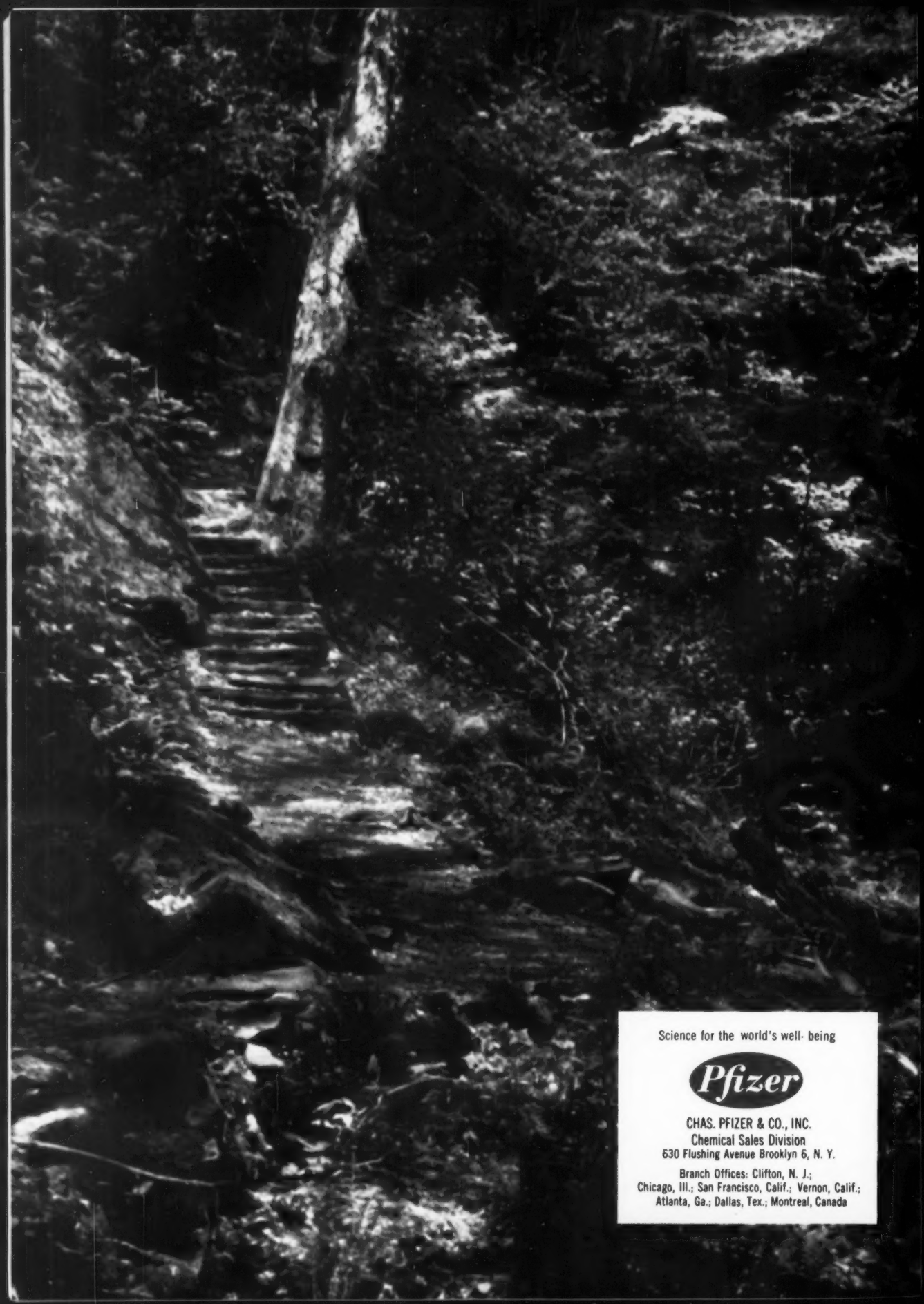
This sodium salt of citric acid is a versatile, easily assimilated product that has many uses in the food industry. Used as an emulsifier in cheese products, it produces smooth, even melting cheese that slices and spreads easily. Similarly, it improves the texture of ice cream. Pfizer Sodium Citrate acts as a buffer salt to control the pH in jellies, preserves, dessert powders, and canned fruit juice blends. And like citric acid, it also brings out true fruit flavor.

CITROFLEX® A-4 PLASTICIZER

Non-toxic, odorless, Pfizer Citroflex A-4 has been accepted by the Food & Drug Administration for use in packaging for both fatty and non-fatty foods. Citroflex A-4 (Acetyl Tributyl Citrate) shows excellent results in plasticized vinyl films for meat wrapping, vinyl coating for food containers and hot drink cups, and vinyl plasticizers for food jar liners and sealing rings. In addition, Pfizer Citroflex A-4 is excellent in polyvinyl acetate adhesives. Low in cost and high in performance Pfizer Citroflex A-4 is finding wide use in plastic coatings for the food industry.

PHYSICAL PROPERTIES OF PFIZER CITRIC ACID

	Anhydrous	Hydrous
Formula	$C_6H_8O_7$	$C_6H_8O_7 \cdot H_2O$
Molecular Wt.	192.12	210.14
Density	1.67	1.54
Melting Point	153°C	Loses water
Solubility, 25°C		
Water	161.8 gm./100 ml.	208.6 gm./100 ml.
Alcohol	59.1 gm./100 ml.	90.4 gm./100 ml.
Ether	0.75 gm./100 ml.	1.6 gm./100 ml.



Science for the world's well- being

Pfizer

CHAS. PFIZER & CO., INC.
Chemical Sales Division
630 Flushing Avenue Brooklyn 6, N. Y.

Branch Offices: Clifton, N. J.;
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Atlanta, Ga.; Dallas, Tex.; Montreal, Canada

IN "ALMOST NO TIME", this robot read-compute-print system accurately evaluates grade and yield of hog carcasses in big-volume runs of Rath's progressive buying program. Indicated are high-speed reader (A), central processor (B), printer (C), and read-punch unit (D). Compact layout streamlines action.

FOOD ENGINEERING

Quality-Yield Facts in a Flash!

Speed-minded Iowa packer gets vital hog data in zip time from electronic brain—a swift Univac figure-digester that does paperwork on 1,200 carcasses in less than 3 min . . . Flexible system also "double-quicks" the sales reports

MANUAL keeping of slaughter records—to provide full-run daily checks on carcass-grade and yield of every hog—can be a mighty costly, fatiguing business.

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"

Especially if—as at The Rath Packing Co.'s Waterloo, Iowa, plant—your volume is constantly multiplying.

The checking pressure at Rath's had been on the climb ever since the inauguration of a new hog-buying program in '55. But then the company made a move that changed this tough data routine into a breeze. In short, Rath "went automatic"—installed an electronic 'brain' (Remington Rand's solid-state Univac 90 computer) to handle the job.

Today, the paperwork on 1,200 hogs is whisked through by the computer in less than 3 min., according to Ted Gibson, company director of business machine accounting. In contrast, the manual task used to take four men all afternoon.

The computer directly processes standard-size punch cards without need of special conversion units. Employed are a high-speed reader, central processor, fast printer, and read-punch units hooked up in balanced layout to form a com-

HEART OF SYSTEM is this central processor. By fingering keys on compact check-box, operator questions 'brain' to learn what stage it has reached on the "working" problem. Answers flash on panel.

pletely on-line data-processing system. Rental on the equipment runs about $7,000 a month.

Grade-Yield Benefits

By supplying hogs to the company on a carcass grade-and-yield basis, producers receive payments specifically in line with quality of livestock. Naturally, the meatier-type hogs are worth more, and so bring more. And under this program, the company pays less—and the producer gets less—for overfat, poorer-quality hogs.

The grade-yield program thus encourages producers to be more selective in obtaining their breeding stock. As a result, pork quality is greatly improved. It's also to be noted that the producer may exercise the option of selling on a live-weight basis, in which case the hogs are priced by the buyer when they're weighed.

How the system works: Starting point of the program is at the receiving station, where hogs are first weighed, then tattooed to identify producer and buyer. Later, when slaughtered hogs are scaled at the plant, operator punches weight, tattoo code, and grade on a tele-adding machine, which relays the information through a 1,000-ft. cable to a card-punch machine in the company accounting department. The data are punched, in random order, on cards, which are then fed to a sorting machine.

At this point, the computer is ready to take over. Sorted punched cards are fed into the input magazine of the reader, which enters and collates data into the central processor. Segregation of the input cards proceeds at rates up to 450 per min.

The reader consists of two reading stations and three output stackers. Its operation is completely controlled by a pre-determined program stored on a magnetic drum in the central processor.

At the proper time in the cycle, a card feeds from magazine to first read station for sensing and transferring of information to the buffer on the drum. Card is then advanced to second read station, and information is relayed to second buffer area. Processor, by programmed instructions, compares information on two buffer areas. Meanwhile, card advances to designated output stacker, and next card cycle starts.

The heart of this Univac system is the central processor, which controls the entire data-processing operation. Housed here is a 50,000-digit drum. Storage buffers permit computing while reading, printing, and punching take place. The drum stores information on average weights, yields, grades, etc., with which the hog being evaluated is compared. Computer can perform 2,300 additions, subtractions, and other calculations, in a split second.

High-speed printing (600 lines per min.) follows. Information to be typed out is transferred by programmed instruction to print buffer on magnetic drum. Unit then advances multi-copy forms to required printing line, types out the information, and makes up the producer's payment check.

Last unit—the reader-puncher—also picks up information from the buffer. However, this data is transferred for punching onto cards. At unit's two read stations, card information is sensed, with corresponding data sent to associated buffer areas on drum. Punched cards are then program-sorted into two stackers. Unit reads and punches 150 cards per minute.

Results? In addition to speed, the new equipment and routine provide:

. . . **Performance flexibility.** Computer's always available to handle numerous company jobs other than the hog grade-yield program.

. . . **New accuracy.** There was always the chance of errors in the old manual handling of data, relative to grades, weight ranges, prices, etc. In contrast, the new method is termed error-free.

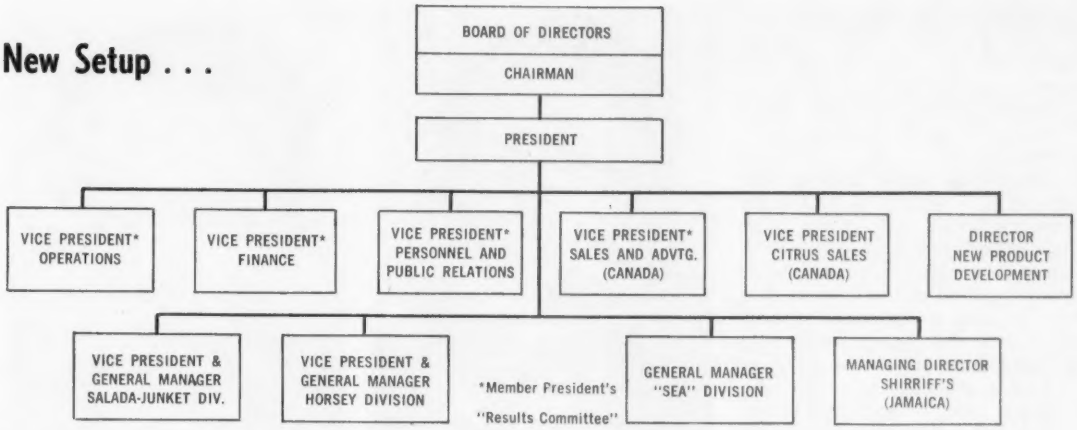
. . . **Faster payments.** Checks are mailed to producers the same day the hogs are dressed (instead of days later).

. . . **Better quality.** With higher payments as an incentive, producers strive to raise meatier, improved-quality hogs.

As for flexibility, the equipment is now undergoing shakedown tests for other company applications. For instance, it's currently being used for sales reports, providing the sales and accounting departments with weekly data on movements of products, all classified (as smoked meats, dry sausage, canned meats, etc.).

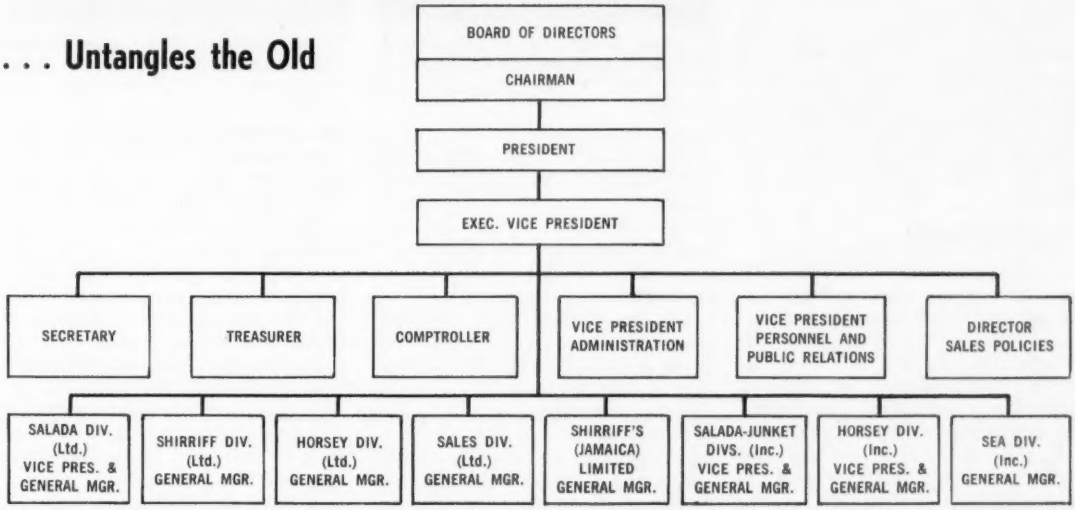
It is also providing analyses of monthly dollar performance and tonnage, and even gets down to specific figures for each district, route, and salesman. —*End*

New Setup . . .


BOARD OF DIRECTORS
CHAIRMAN
PRESIDENT
VICE PRESIDENT* OPERATIONS
VICE PRESIDENT* FINANCE
VICE PRESIDENT* PERSONNEL AND PUBLIC RELATIONS
VICE PRESIDENT* SALES AND ADVTG. (CANADA)
VICE PRESIDENT CITRUS SALES (CANADA)
DIRECTOR NEW PRODUCT DEVELOPMENT
VICE PRESIDENT & GENERAL MANAGER SALADA-JUNKET DIV.
VICE PRESIDENT & GENERAL MANAGER HORSEY DIVISION
*Member President's "Results Committee"
GENERAL MANAGER "SEA" DIVISION
MANAGING DIRECTOR SHIRRIFF'S (JAMAICA)

Streamlining at Salada-Shirriff-Horsey regroups top-level post along functional lines for smoother operations.

. . . Untangles the Old


BOARD OF DIRECTORS
CHAIRMAN
PRESIDENT
EXEC. VICE PRESIDENT
SECRETARY
TREASURER
COMPTROLLER
VICE PRESIDENT ADMINISTRATION
VICE PRESIDENT PERSONNEL AND PUBLIC RELATIONS
DIRECTOR SALES POLICIES
SALADA DIV. (Ltd.) VICE PRES. & GENERAL MGR.
SHIRRIFF DIV. (Ltd.) GENERAL MGR.
HORSEY DIV. (Ltd.) GENERAL MGR.
SALES DIV. (Ltd.) GENERAL MGR.
SHIRRIFF'S (JAMAICA) LIMITED GENERAL MGR.
SALADA-JUNKET DIVS. (Inc.) VICE PRES. & GENERAL MGR.
HORSEY DIV. (Inc.) VICE PRES. & GENERAL MGR.
SEA DIV. (Inc.) GENERAL MGR.

Hierarchy pattern of old organization had 14 officials reporting to exec. v.-p., resulting in log jam on key decisions.

Making Bigness More Efficient

That Was No. 1 problem faced by Salada-Shirriff-Horsey as result of a series of mergers . . . Its solution: A growth-improvement plan that gives management a surer grip on corporate operations, grooms tomorrow's leaders, sparks new marketing performance

DIVERSIFICATION as a foundation for building future growth has led many food companies down the merger trail the past few years.

But putting together a business empire that way has its hazards if the bigness becomes too unwieldy.

How to make bigness lead to a better-run company is demonstrated by the performance-boosting program at Salada-Shirriff-Horsey, a Canadian-based outfit whose sales have soared from $18-million to $50-million since '56. With a series of mergers behind it, the company is now in the midst of a growth-improvement project that it hopes will lead to even bigger expansion.

To lay the groundwork, the company set in action a sweeping overhaul that's already paying off with surer management decision-making, better training of future executives for the stiffer challenges ahead, streamlined selling efficiency, and fruitful new-product development.

As a result, the company figures

THAYER C. TAYLOR

Associate Editor, "Food Engineering"

to double its $50 million volume in the next few years. But, of special significance to marketers in this country, S-S-H hopes to triple its U. S. sales during the same period from the current $25 million to $75 million.

One reason for the buoyant outlook on U. S. sales is the limited distribution Salada and 'Junket' presently enjoyed in this country. While Salada dominates the field in Canada (with one-third of the market), it is number three in this country (trailing Lipton and Tetley), with sales confined pretty much to the East.

'Junket' custard has a smaller distribution base; in fact, gets almost half of its volume from just one metropolitan market area. Also, its appeal has been limited to a very narrow age group.

To S-S-H this means both products have an impressive untapped potential ahead of them. Plans have already been put in motion to push Salada into national distribution, as well as give Junket products more "body" texture to broaden their age appeal.

Building Blocks

Pres. Grant Horsey (photos) began putting the S-S-H complex together in '55 when, seeking to expand his shrimp-citrus base, he bought Shirriff's Ltd., a leading Canadian food producer. The following year a new subsidiary was formed to buy Allen-Crawford Ltd., maker of candy and cocoa products; two more Canadian outfits were absorbed; and a 50% interest in Green Giant of Canada Ltd. was negotiated.

Still riding the merger wave, Horsey in 1957 added Prior's Foods Ltd. (fruit items) to the fold. Then he finally broke into the big time with the acquisition of Salada Tea.

The following year, Skyway Groves, citrus acreage operator, was acquired to assure Horsey's Florida plants a supply source. Later in the year, Horsey took another significant step with the purchase of Junket Brand Foods Div. of Chr. Hansen's Laboratory Inc.

This move gave S-S-H what every growth-minded company needs – a modern, up-to-date lab around which it could build a research center. With the company betting strongly on new products to spark future growth, this move could prove to be the most significant one made yet.

Chew, Swallow, Digest

Horsey is still on the lookout for merger possibilities. In fact, he says, if supermarkets move deeper into nonfoods, S-S-H may take off in that direction – a policy that's already been adopted by several industry leaders, such as General Foods, General Mills, Pillsbury, and Nabisco, to name a few.

"Bigness is OK as an objective if you use it to make your company a better one."

"If the supermarkets move deeper into nonfoods, manufacturers may have to do the same."

On the whole, though, the company feels it's gone a long way toward getting the broader product mix it targeted back in the '50s. What management is most concerned with today is the job of assembling the acquired companies into a trim, tight, smoothly run ship.

"Bigness is O. K. as an objective if it makes you a better company," sums up Pres. Horsey.

To make its greatly increased structure operate more efficiently, S-S-H last year had a leading Canadian management consultant firm probe the company from top to bottom. The consultant's findings, plus management's own observations, were then jelled into the long-term growth-improvement program.

What has emerged from this pooling of ideas reflects some of Horsey's impatience with many of the cliches that enjoy wide currency today. He doesn't think decentralization is an undisguised blessing. He feels that committees (long the darling of consultants) talk too much. And he suspects that the total "marketing concept" has been oversold.

The broad reorganization that is still going on at S-S-H has mixed centralization with decentralization. In Canada, the top level structure was tightened last Fall when the three operating divisions and two sales forces were consolidated into one Canadian division with its own selling crew. An opposite tack was followed in the U. S., where the company still operates with three corporate divisions – Salada-Junket, Horsey, and Shoreline Enterprises of America (shrimp packer).

Top management positions have been overhauled, too–with the result that more decision-making is centered at the top, where, Horsey feels, it belongs. As has been the case with many other merger-minded companies, S-S-H found some executive positions becoming snowed under with problem-solving.

At one time, for example, some 18 department and division managers reported directly to the executive vice-president. As a result, a critical bottleneck developed, and important problems went unsolved because of the lack of time to study them.

To break the log-jam, the company scrapped what was a "hierarchy" pattern in favor of a more functional one. Now, each of the company's four basic functions–advertising-sales, manufacturing (called operations), finance, and personnel-trade (or human) relations–is headed by a vice-president reporting to Horsey.

Also under the president's wing are staff assistants who oversee imimportant business areas–an R&D director and a new product development director, for example. Moreover, there are four division heads

"Committees today tend to talk too much. We're more interested in results that count."

"The marketing manager may be replaced by the R&D director as the next fair-haired boy."

who are responsible to Horsey but who report in various functional aspects to the appropriate v.-p.

A blend of line and staff organizations has also been introduced. In Canada, top management acts as a line group—with the president serving as general manager, and v.-p.s as heads of their departments. In the U. S. operation, the same top-management echelon is more like a staff setup because of the considerable autonomy given division managers on day-to-day strategy and profit building.

These moves have already paid off "with increased efficiency and more profitable operations," Horsey reports. "But," he adds, "we're not through simplifying, and will continue to examine every area at regular intervals."

Some Toe-Snappers

To keep the overhauled system on a streamlined basis, S-S-H is putting more stress on profit plans for operational guidance and is slashing away at the committees that once flowered all over the place.

The firm's profit plan, drawn up annually, is based on the approved budget, which in turn is the result of ideas submitted by the division managers. Used primarily as a control instrument, the plan is revised whenever actual experience or changed forecasts and trends warrant it.

At the same time, more thought is being given to 3-yr. and 5-yr. plans. These are worked up by the board chairman, president, and treasurer, who call on other top management execs for advice from time to time.

Backing up the profit plan is what Horsey calls "the results committee—the one standard group we officially recognize." He calls it that because of his feeling that "most committees today talk too much." As he puts it: "We're more interested in results."

This group, which meets once a month, includes Horsey and the four functional v.-p.s. Sitting down together right after the previous month's financial statement has come out, the five men review problems and hand out assignments to one another with the proviso that "the results be reported on at the next meeting."

This way, Horsey claims, corrective action is taken when needed, and the pinpointed responsibility shows what has to be done and where to look for the answers. "Previously," he adds, "small problems sometimes became big ones because we frittered away our time talking."

Frequently, outside division or department heads are asked to submit reports in person at the committee's meetings. These presentations help give top brass the overall picture they need to gage the company's performance.

Of course, Horsey is well aware that no matter how good an organization chart looks on paper, it takes capable men, occupying the important boxes, to make the setup truly efficient.

To make sure the right managers are in the right slots, S-S-H has intensified its personnel development program.

For one thing, Horsey leans to the theory that the best teacher an employee can have is a good boss who knows his stuff. Along those lines, the company makes each executive responsible for the training and development of men under him.

The personnel department uses what is roughly called "a plan for every man." It keeps a running assessment of each worker's performance, and is always on the lookout for people who show a potential for rising to management levels.

A formal job evaluation program covers the lower echelons—such as hourly paid workers and clerical force. Here, specifications drawn up by an outside consultant are used to appraise each employee at least once a year.

The company plans to extend this to middle management and administrative positions in the near future. One phase of this plan aims at bringing about more uniformity between salary levels that got scrambled as a result of the mergers.

Also, potential managers are shifted geographically as part of the grooming process. A uniform compensation arrangement would avoid the financial headaches a man suffers as the result of a new assignment.

Focus on Tomorrow

With long-range plans calling for stepped-up growth, S-S-H is bearing down on perfecting its selling techniques and new-product development programs.

Initially, the firm tried what is called "total marketing concept." But, Horsey says, this tended to overemphasize one phase of the business. He feels that what S-S-H calls "integrated selling" brings about a more harmonious, coordinated drive.

"Actually, the greatest change we made in methods of planning and administering sales and advertising was in nomenclature," the president states. "Those who have been in the business for many years recall the cycles during which certain members of the team have been completely 'in the saddle.'

"In the '20s, the advertising stunt man was the key figure. Then it was the controller . . . then the market researcher . . . then the high pressure sales manager . . . and more recently the marketing manager. I think this last phase is showing signs of dwindling, and that possibly

Building Company Loyalty

A strong believer in business ethics, Pres. Grant Horsey is always stressing the need for promoting the quality standard in both products and corporate relations. In an effort to make this a more tangible thing to its work force, the company has this formal pledge, which employees are asked to sign:

That the proud banner of "Excellence" on our Symbol may continue to be a solid statement of fact rather than an idle boast, we, the people of Salada-Shirriff-Horsey, pledge ourselves:

1) to the maintenance of an unexcelled quality in all our products

2) to the highest integrity in all of our dealings with customers and suppliers

3) to the enrichment of modern living through the development of new and better food products

4) to the reduction of food costs to the public through constant advancements in production efficiency

5) to a friendly spirit of cooperation and helpful comradeship in our daily work, at all levels and between all levels; to the willing acceptance of our responsibilities within the community, and

6) to the complete fulfillment of all our responsibilities to the men and women in all walks of life who are the share owners of the company.

I hereby join the people of Salada-Shirriff-Horsey in subscribing to this pledge.

the research technologist will take over next.

"Enlightened management recognizes that there are many important functions in a business and strives to keep a dynamic balance between them. If any one faction dominates, the resulting imbalance can ultimately weaken the organization's effectiveness.

"Col. Urwick, a British organizational consultant, warns 'keep the experts on tap, but never on top.'

"We still believe in a program oriented to our ultimate consumer. But we look on it as an approach which considers all the elements in reaching the consumer, including selling and merchandising.

"When you realize that we can cover the grocery trade by contacting 40 major headquarters in the U. S. and 8 in Canada, you can see how important it is that our selling policies be well-handled."

Better integrated new-product development has been targeted with the creation of a new post covering that area. Because Horsey considers this to be one of the company's most important phases, the new-products director reports directly to the president.

With this new post, S-S-H scrapped the various new-product groups that were scattered among the different member companies. Previously, Horsey says, there was unavoidable waste — ideas for new items got lost in corporate channels, too much time was spent discussing feasibility of a proposed product, or proposals foundered because there was no "take-charge" official to see them through.

As things stand now, anyone with a new-product idea can bring it to the director, who of course is also devoting his time to the hunt for new additions to the product line.

A 3-phase procedure streamlines the program. In the first, or "red light," stage, the director brings Horsey a new idea in rough form. Manufacturing then checks to see if available equipment will produce the proposed product, finance makes up a basic cost estimate, and the four v.-p.'s evaluate the feasibility angle.

If the president O. K.'s the idea, it moves to the second, or "yellow light," stage. Here, advertising-selling estimates the sales potential, manufacturing decides how much new equipment will cost if present lines won't do, and finance draws up the gross margin and capital investment that will be required.

After all these factors are weighed, and Horsey gives the go-ahead, the proposal moves into the third, or "green light," stage. A marketing plan is created for the item, and production schedules are set up—all being coordinated by top management.

The president, naturally, won't disclose what new products S-S-H is planning to introduce. But he does indicate that the instant or dehydrated foods offer the biggest potential right now—in fact, the firm recently got exclusive Canadian rights to instant potato flakes and built a new $1-million plant to produce the product. And last month instant tea joined the Salada line.

"Eventually, processors will be able to give the housewife instant fruit juice, milk, vegetables—almost anything except meat," he predicts.

But, he cautions, convenience isn't the only thing to look for in a new product. Quality will become even more important to product success than it is today, he says, because with practically all new items now offering work-free advantages, the housewife will be looking for an extra.

As he puts it: "A few years ago, you could sell an item that was quick to prepare and it would be bought without too much demand for quality. Now, convenience is no substitute for quality—the housewife demands both."

The president also sees S-S-H's new-product development expanding outside the food sector as the result of new retail merchandising trends.

"The supermarket has already changed many of our ways of operating and opened up many opportunities," he reasons. "We have to keep examining the way they do business and what they want from us. This may mean even more diversification — probably into non-foods."

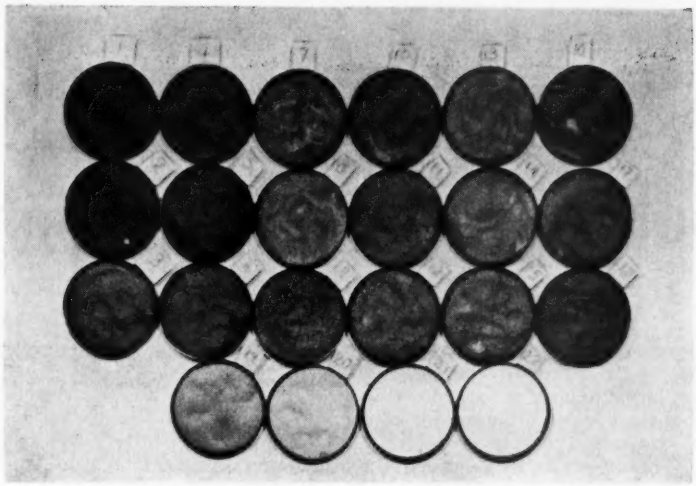
The Creed

Along with efficiency, Horsey hopes to build loyalty of customers and employees as another foundation of future growth.

Any business empire that's been put together with mergers and acquisitions always has the problem of building a strong, single "image" with the public. So, S-S-H has redesigned all its packages to give its 9 different brands a family look. And the corporate insignia—the Chessman "Symbol of Excellence"—has been incorporated in all package design, promotions, and advertising.

To make all of its 2,113 employees feel they have a big stake in the firm's future, Horsey spent two years working up a corporate "pledge" (see box) that he hopes will serve as "a way of crystallizing the company philosophy."

Back in the '50s, Horsey often asked himself, "Where do we go from here?" He doesn't profess to have the final answer as yet, but he is convinced that the steps already taken have gone a long way to making S-S-H "a better place to do business with, a better place to work for." —*End*



THE IRRADIATED SAMPLES were all discolored when subjected to 9.3 million rads. However, colors varied from brown to deep purple according to differences in crystal sizes and shapes. Two samples (bottom, right) weren't exposed.

Why A-Rays Discolor Salt

Study discloses that change is due to phase transformation in crystals, not to additives or impurities

IONIZING RADIATION produces a discoloration in salt crystals regardless of their purity.

However, the change is reversible —the crystals resuming their original color upon heating. Also, exposure to air causes the discoloration to fade, but not to completely disappear.

In 1956 it was reported that, in a nuclear test explosion to which foods had been exposed, one of the most striking effects was the yellowing of table salt.

At first, it was believed that liberation of free iodine was responsible. But chemical analyses failed to confirm this. Reagent-grade sodium chloride also exhibited slight yellowing upon exposure. Presence of iron was then suspected as the cause.

It occurred to us that in development of food preservation methods using ionizing radiation to produce bacteria and mold-free material, the discoloration of salt might be objectionable. Consequently, a cooperative investigation with the QM. Food & Container Institute was initiated.

KURT LADENBURG and ARTHUR BLOOMBERG

Research Laboratory, International Salt Co., New York City.

Samples of different grades of salt, containing various commercial additives, were to be subjected to radiation of different energies and at different dose levels. Extent of discoloration and effect on microbiological contamination were to be determined.

TO DETERMINE What Caused Discoloration, These 20 Different Samples Were Irradiated

Commercial evaporated salt
Purified salt
Highly refined
Evaporated salt, iodized
Purified, iodized
Highly refined, iodized
Evaporated, iodized, 0.5% magnesium carbonate
Purified, iodized, magnesium carbonate
Highly refined, iodized, magnesium carbonate
Commercial evaporated, iodized, 0.5% Silene
Purified, iodized, 0.5% Silene
Highly refined, iodized, Silene
Evaporated, iodized, 0.5% magnesium carbonate, EDTA treated
Purified, iodized, magnesium carbonate, EDTA treated
High refined, iodized, magnesium carbonate, EDTA treated
Commercial evaporated, iodized, 0.5% Silene, EDTA treated
Purified, iodized, 0.5% Silene, EDTA treated
Highly refined, iodized, Silene, EDTA treated
Alberger salt, 0.5% sodium calcium silicoaluminate
Alberger salt, iodized, sodium calcium silicoaluminate

First series of samples contained three grades of evaporated salt: (1) Commercial (average purity of 99.70% NaCl); (2) purified, containing 99.97% NaCl, and (3) highly refined, obtained by precipitation from solution of purified salt with HCl (NaCl content better than 99.999%). To each sample was added 0.02% potassium iodide stabilized with 0.12% sodium thiosulfate.

Effect of Additives

One portion of the iodized salt was treated with 0.5% calcium silicate (Silene, Columbia-Southern Chemical Corp.), and another with magnesium carbonate. These samples were then treated with sufficient ethylenediaminetetraacetic acid to sequester all of the iron present in the additives. Still another set of samples was prepared from salt produced by the Alberger Process (see Table).

Each sample consisted of 100g. of salt sealed in a polyethylene bag. Samples were sent to the Material Testing Reactor, Idaho Falls, Ida., and subjected to a total dose of 9.3 million rads of gamma radiation.

Upon return from the reactor, a portion of each sample was retained for microbiological examination. Another portion was placed in an open dish. All samples were photographed

(*Continued on p. 61*)

Court-Case Closeups Point

IT'S BEST, by far, to avoid legal troubles in the first place.

But it's not always possible to steer clear. And so—to put it in the vernacular—it's wise for you to learn "just what goes" in food-case litigation.

Herein, we brief eight recent higher court decisions, all offering specific frames of reference for operators in the food industry. Knowing these facts will help you play safe, also will aid you in "navigating" if circumstances take you into rough legal waters.

Court index references are included as guides for those wishing to make library rundowns on complete decisions.

1. Quality Goods Arrived Bad

Considerable argument has arisen over the legal situation where a shipper proves that food products he delivered in good condition to a common carrier were later received by the consignee in damaged condition.

The big question: Is the shipper further obligated to demonstrate that the carrier's negligence caused the damage—in order to get a favorable verdict?

According to a recent high court decision, the answer is "No." In short, having proved the goods reached the consignee in a damaged state, the shipper has a solid *prima facie* case against the carrier.

In the pertinent case—*Southern-Plaza Express v. Harville* (233 Fed., 2d, 264)—the shipper demonstrated that 835 cartons of goods he had turned over to the carrier in quality condition were delivered in Baltimore a week later with the wrappers spoiled and damp, the labels destroyed, and the containers stained and moist. These goods were then sold at a distress sale.

In subsequent litigation, the jury awarded the shipper damages equal to the difference between the 40¢-per-carton received at the distress sale and the 70¢-per-carton market value of undamaged packages.

The higher court approved the jury's verdict, saying that it found no facts to prevent the shipper's "reliance on the *prima facie* case arising from a safe condition of goods on delivery and damaged condition on receipt."

2. Pitfalls of Poor Cleaning

Failure in sanitation routines can quickly lead to trouble. This was demonstrated once again when a higher court recently held a packer liable for illness contracted by a consumer due to laxity in cleaning a grinder.

The case was *Niemann v. Grand Central* (337 Pac., 2d, 424), involving suit for heavy damages following alleged contraction of trichinosis after eating meat sold by the packer.

Niemann proved that the packer used the same grinder for both beef and pork, with beef sometimes ground after preparation of sausage. And he cited the point that an ounce could contain 100,000 trichinae larvae, or 500 times the amount necessary to produce severe illness.

The testimony further showed that no sickness was suffered by persons who didn't partake of the ground beef.

Niemann contended that the packer was negligent because he failed to clean the grinder properly after the pork had been ground, allowing particles to remain and become mixed with the subsequently ground beef.

Thereupon the higher court held the packer liable, saying: "The law imposes upon a person or corporation that sells food for human consumption a duty to see to it that it is not adulterated. If ground beef contains sausage with trichinae it is an adulterated food."

3. Watch Those Zoning Laws

City zoning ordinances demand a very careful eye before you make a move—since they often raise factors that can throw you for a heavy financial loss when matters go awry.

Not infrequently, food product firms are refused license to do business in buildings newly constructed in limitation areas. However, with knowledge of specific court decisions, food operators can be better prepared to avoid such tangles.

We cite a recent case—*Tankersley Brothers v. City of Fayetteville* (296 S.W., 2d, 412)—which worked out favorably for the food firm by only a very close squeak. Here, a wholesale distributor of frozen foods decided to establish a branch plant, and accordingly filed application for a permit to erect a "one-story masonry commercial building."

A permit was duly granted by the city council—but this was despite the actual fact that a zoning ordinance prohibited such buildings in this area.

The structure was completed and the business begun—sales, storage, and distribution at wholesale of frozen and refrigerated foods to restaurants, grocery stores, and other retail establishments. Eventually, however, certain nearby property owners sought a court injunction to stop such operations and have the building torn down.

But the higher court held that since the distributor had constructed the building under a permit from the city, and it had operated the business there for four months without any complaint, the city was "estopped" from having the structure removed or from denying the right to operate—even though a zoning ordinance was being violated.

4. Injured When Opening It

Meantime there is new clarity relative to some of the more common points of issue. For instance,

LEO T. PARKER
Attorney at Law, Cincinnati

Way to Avoid Legal Troubles

the law is now established that a food manufacturer is not ordinarily liable in damages for injuries sustained by a purchaser while opening the product container.

Take *Vincent v. Nicholas E. Tsiknas Co., Inc.* (151 N.E., 2d, 263). Here, the testimony detailed how a woman named Vincent had gone to a retail grocery store and bought some baby food—put up by a well-known packer in a jar made by an equally well-known glass-container maker. Fitted over the lip of the jar was a metal cap bearing the printing: "Pry up gently at points indicated," these points being shown by three arrows.

No opener came with the jar, and the woman attempted to remove the cap with the aid of the type of opener used on cans of beer. The glass shoulder did not withstand the pressure exerted, thus the jar broke while in the woman's hand, and she sustained severe injury. Thereupon she sued the food manufacturer for heavy damages.

But the higher court refused to hold the manufacturer liable. And in its decision it declared: "We do not think that glass jars are sold or bought in the expectation that they will be subjected to pressures which may be developed by using as a lever, in the manner described, a tool designed to make holes in metal cans."

With respect to the woman's argument that the manufacturer was negligent in failing to include a proper opener with the jar, this court held that a manufacturer is not required by law, or otherwise, to furnish a buyer of its product with easy mechanical means to open the container.

Take a Try at Answering These Questions

—Then compare your thinking against the significant legal factors accented by Attorney Parker in these 8 briefs covering recent key higher court decisions

- *Must you demonstrate exactly how a common carrier mishandled your goods before you can win damages?*
- *What No. 1 legal risk do you take when your machines aren't cleaned between runs?*
- *What's your wisest approach to the matter of city zoning ordinances?*
- *How have new court decisions favored foodmen in cases where consumers are hurt when opening containers?*
- *When will "saying it on the label" keep you clear of a pack of trouble?*
- *Why shouldn't you let your legal defense "just run on logical assumption"?*
- *What's the best factor for getting the jury to believe your story?*
- *What's your protective approach relative to 'open hazards' in your plant area?*

5. Saved by Label Statement

Sometimes, state laws are written which, in effect, "get in the way" of the manufacturer and sale of food products which are nutritious and wholesome.

But a recent higher court rendered the important decision that on this particular score state laws may be invalid. Specifically, this court declared that a food made from imitation products violates no law—if the ingredients and their percentages are plainly printed on the container.

Spotlighted here was a company's manufacture and sale of milk and cream products to which were added fat or oil other than milk fat. A state law enacted to prohibit sale of such products was specially cited when the court heard testimony in *State v. Imperial Ice Cream, Inc.* (342 Pac., 2d, 1088).

The facts were that Imperial was making and selling "Imitation Ice Milk" and "Imitation Ice Cream"—products which, nevertheless, were nutritious, wholesome, and healthful. Ingredients used were: Vegetable fat 6%, nonfat dry milk solids 11%, liquid sugar 9¼%, liquid corn sugar 9%, stabilizer and emulsifier .49%, vanilla flavoring .14% and water 64.12%. These materials were processed into a product having texture, body, and taste not readily distinguishable from ice cream and ice milk.

Refusing to countenance prohibition of these products under the cited legislation, the higher court held the state law invalid and unenforceable, saying:

"The record clearly shows that no deception or fraud could possibly result therefrom because full information thereof is given in various-size types of printing on both sides of the carton containers.

"While the legislature may enact statutes which affect milk and milk

products, the application of the statute to a specific case is a judicial function."

Key role of the printed label statement is borne out by the contrasting decision in *Carolene Products Co. v. United States* (323 U.S. 18). This time the testimony showed that the company in question employed a process where it abstracted butter fat and then replaced it with vegetable oil.

However, this information was not given on the product container.

Therefore the U. S. Supreme Court declared that a deception was being practiced upon the public—and that accordingly it was within the power of the state to prohibit the sale of such products.

6. You Must Get Proof

It might be said that the way to win a court case is to get proof—and then get more proof. In short, you can't carry a suit on mere assumptions.

Let's consider the common litigation where consumers have claimed manufacturers are liable for illnesses they allegedly suffered from eating or drinking specific products.

A recent case of this kind was *Keller v. Coca Cola Bottling Co. of Walla Walla* (330 Pac., 2d., 346), wherein a consumer named Keller sued to recover damages for sickness he contended resulted after drinking from a bottle containing a cigar stub.

During the trial, witnesses testified that Keller, after consuming about half the bottle's contents, discovered a very bitter taste and then became nauseous.

In answering the charges, the company attempted to avoid liability on the grounds that after the bottle had left the plant, some meddler had stealthily removed the cap, inserted the cigar stub, and carefully recapped the bottle.

The company emphasized that people other than its own personnel had access to the storeroom where the bottles were transferred after leaving the plant, and that this rascality was perpetrated by some unscrupulous outside person.

But sufficient proof of all this was lacking. Hence, the higher court refused to agree with these arguments, and it declared that Keller could recover damages from the defendant bottler, saying:

"We hold that there was a reasonable inference for the jury's consideration that the cigar stub entered or remained in the bottle while in the exclusive control of the defendant."

7. Repeat: You Must Get Proof

To continue further on this vital matter of supplying positive proof, we cite a recent higher court decision that a warehouseman will not be held liable for deterioration of merchandise in cold storage unless the testimony clearly proves (1) that he was negligent, or (2) that he breached a promise made to the owner of the merchandise.

The court then added that if there were contradictions between the testimony of the warehouseman and that of the owner of the goods, then a jury would be called upon to decide whose testimony to believe.

The litigation in question was *Sadoian v. Modesto Refrigerating Co.* (320 Pac., 2d, 583), in which a warehouseman was sued for heavy damages following his alleged negligence in failing to fumigate or gas 12 carloads of grapes at regular 10-day intervals while they were in cold storage in his warehouse.

It was contended by the owner of the grapes that there had been "express agreement and promise" that the warehouseman would provide for thorough gassing of the fruit with SO_2 at the regular intervals named during the entire period of storage.

But instead, alleged the plaintiff, the employees of the warehouse negligently failed to maintain any such schedule of gassing, and as a result the fruit suffered extensive deterioration, rot, and decay.

However, the warehouseman and his employees strongly contradicted that there had been such an agreement. And the jury, indicating that it believed this latter testimony, did not hold the warehouseman liable.

As the court summed it up, the owner of the grapes did not positively prove that the warehouseman actually had promised to gas the fruit at 10-day intervals.

Declared the court: "The evidence here has been highly conflicting, but it is sufficient to support the verdict of the jury."

8. Open-Premise Hazards

Just what are your responsibilities when "persons who are neither connected nor invited" suffer injuries in the area of your property?

Commonly involved here are neighborhood children. And the answer is clear: If you permit youngsters to play around hazards, then you may be held liable when an injury is sustained.

Here, the circumstances can be very important. For example, testimony in *Schmit v. Spring* (13 N.W., 2d, 382) detailed how a plant owner had several danger-indicating flares placed at the edge of an excavation on company property.

However, it was further borne out that this plant owner knew that neighborhood children had been playing in the sand around the excavation during the previous three weeks that the work had been in progress.

The court case resulted after a small boy was severely injured one night when his clothes caught fire from one of the flares. His parents promptly sued the plant owner for damages.

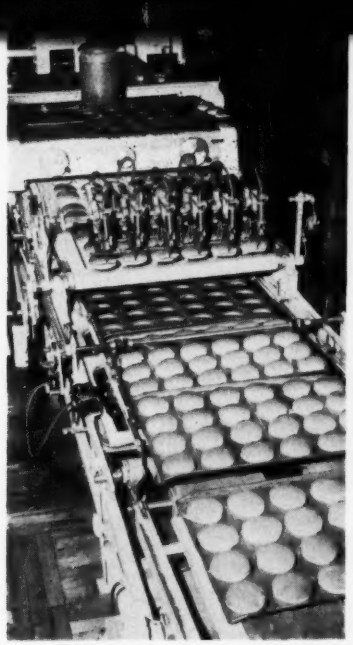
And they won—for the higher court held the owner to be at fault in not providing safeguards when, as testified, he had known that the children had been in the habit of playing around the excavation.

But the result was different in the paralleled case of *Clark v. Bremerton* (1 Wash., 2d, 689). Here the testimony showed that a flare was instrumental in the death of a 10-yr.-old boy who suffered misfortune when playing with it.

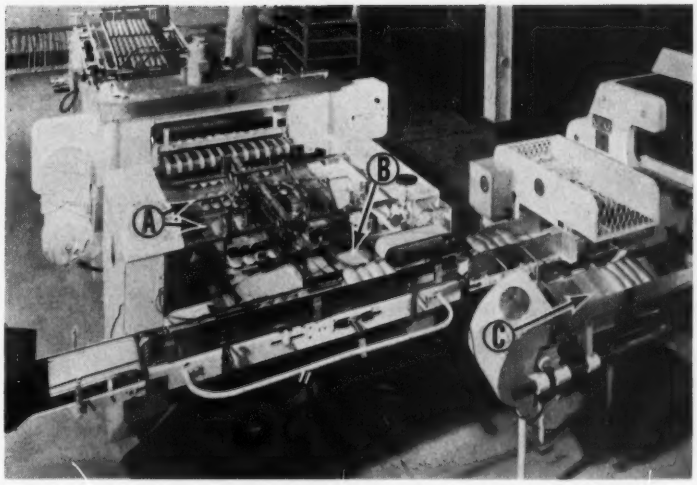
In this litigation, the court refused to hold the corporation liable, saying, "The testimony shows that the accident was brought about by the child's own intermeddling with the lighted flare pot."

Significantly, this case bore out the fact that the corporation officials had no knowledge that children customarily played around the flare.

—*End*



COOLED BUNS are lifted from molds and placed on conveyor leading to slicer by air-operated pickup fingers. Five interchangeable heads for depanning unit accommodate buns or rolls, individually or in clusters.



DEPANNED ROLLS are divided into two groups (A), then fed in pre-set quantities to cartons (B) that come from box-maker on right-angle conveyor chain. Filled cartons are then transferred to overwrapper (C).

'No-Hands' Bun Packing . . .

. . . achieved by speedy labor-saving unit that de-pans, slices, and wraps rolls in continuous operation

LATEST WEAPON against rising costs is a new automatic packer that handles hamburger buns and frankfurter rolls in a smooth, no-manual-handling, continuous operation.

Scoring significantly in an area that was previously marked by high labor costs, the machine automatically picks buns off pans (that are mechanically stacked), aligns and groups rolls, slices them, forms and dispenses boxes for packaging, and transfers cartons or roll clusters to the wrapping machine.

Among first firms to report big savings with unit are Interstate Baking, Los Angeles; Davidson Baking, Portland, Ore.; Buchan Baking, Tacoma; Jones Bros. Bakery, Greensboro, N. C.; and a prominent Midwest outfit.

The latter credits the equipment (American Machine & Foundry's "Uni-Packer"), with these four prime benefits:

. . . **Increased production efficiency.** Formerly two manual-packing lines handled the 280-290 buns/min. output from an AMF "Panomatic" bun-maker (dough divider, rounder, proofer, and panner). But the new system moves product through at up to 315/min.).

. . . **Lower labor costs.** Four men needed on former line have been transferred to other duties.

. . . **Savings in floor space**—only about half of formerly occupied area required.

. . . **New flexibility** in the slicing and packing of a variety of packs. Rolls are packaged singly 4-on-4 or 6-on-6 into polyethylene-overwrapped cartons or plain poly overwraps. And they may be sliced three different ways—hinge-, complete-, or double-type.

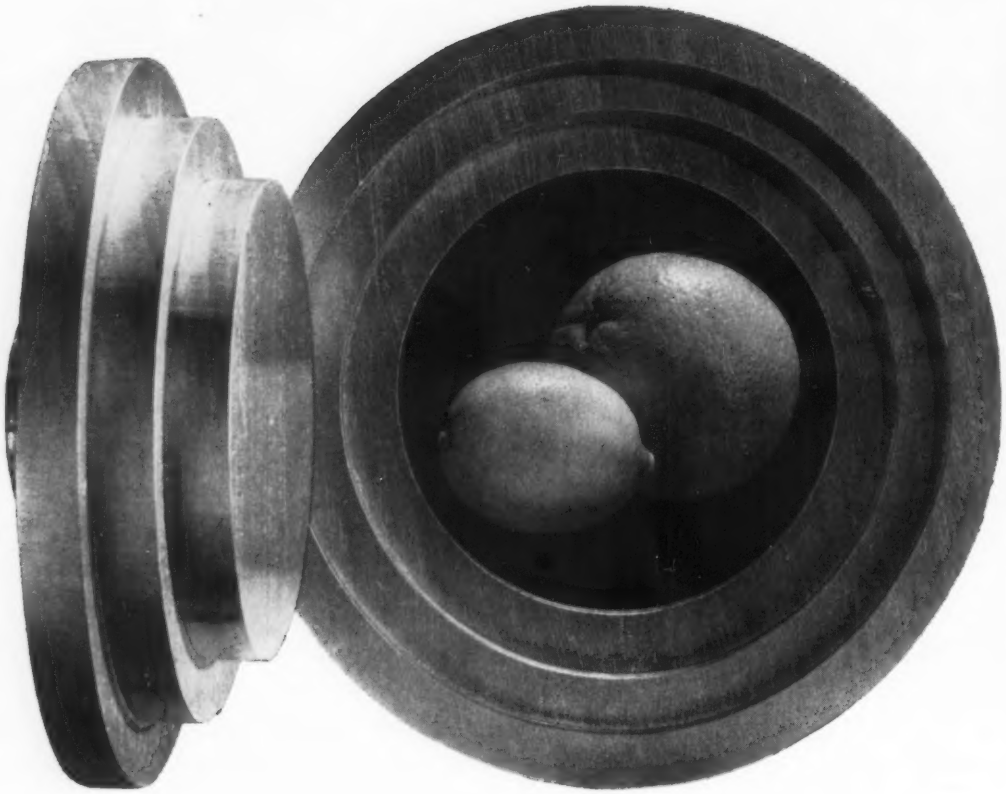
Inside Look

Under the old system, bakers used to dump the buns from pans into a rotating, stainless steel circular trough. A starwheel-type unscrambler single-filed the buns to belt traveling to automatic slicer. Sliced buns were then hand-packed (3 men) into cartons and indexed (1 man) onto feed flights of conveyor proceeding to overwrap machine.

All that's now been changed by the new machine. Today, panned rolls are first fed onto a pair of inclined gravity-roller conveyors (each 1-ft. wide), then transferred onto four 4-in.-wide belt conveyors feeding the pan indexer. In case of cluster rolls, pans pass under a pneumatically operated horizontal hold-down plate that avoids jamups at pickup station in the event rolls are over-proofed and 'netted' together.

Two pairs of indexing fingers (also pneumatically operated) stop pans for pickup fingers to transfer two rows of buns at a time onto chain-driven rod-type conveyor (3x12 ft.) feeding slicing machine. Meanwhile, empty pans return by conveyor to automatic stacker at head of line.

Pickup fingers, arranged in two



HELP YOURSELF TO OUR MOST EXPENSIVE RESEARCH

Have you a "good" product you'd like to convert into a superior one? A processing problem? An idea for a new product that doesn't quite come off?

Call on Sunkist citrus research for help.

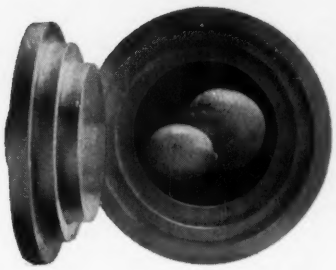
We've been working 44 years squeezing new uses and products out of California oranges and lemons. The payoff has been 118 U.S. Patents...and over 400 new products.

Exchange

All this "know how" is at your service. Sunkist technical men will be glad to work *with* you—in your own plant—or *for* you—in their own citrus research laboratory. Write, and a Sunkist man will call on you.

Sunkist Growers

PRODUCTS SALES DEPARTMENT



CAN LEMON JUICE DO A JOB FOR YOU?

If you're a food processor... fresh, frozen or canned...fruits and vegetables...fish or fowl... lemon juice can do *at least* one thing for you:

- It can prevent or retard off-flavor tendencies...
- Maintain and even enhance natural food flavor—keep food fresh-tasting longer...
- Prevent oxidation, preserve color, texture and flavor during and after processing...
- Adjust acidity in low-acid foods–retard enzyme action...
- Replace salt in low-sodium diet foods...

And that's only a beginning. The list of jobs lemon juice can do is an extensive one.

If you're not using it...you may be letting the competition get a lead on you. Don't market a product that's merely "as good as" the rest. Exchange Brand Concentrated Lemon Juice—made by Sunkist—can often make it superior for only a penny or two—and add a selling ingredient of distinction to your label.

Why not let your Sunkist man talk it over with you?

The address: Sunkist Growers, Products Sales Dept., 720 East Sunkist Street, Ontario, Calif.

rows, reciprocate between pan and slicer-feed conveyor with horizontally mounted aligning rods. By simple change-over, various sets of pickup fingers (2, 4, and 6 to a row) are mounted on reciprocating shaft to handle different size buns as well as groups of them.

Two types of slicing machines are located over conveyor. One consists of horizontal and vertical knives to produce hinged-type buns (that are not sliced completely through) and a band-type slicer–adjustable for slice thickness – operates when bakery wants buns that are either cut in half or double-sliced.

Under the conveyor carrying buns through each slicer is a short "porcupine"-type chain-driven belt with rods carrying ¼-in. needles spaced 1¼ in. apart. Purpose is to secure buns during slicing.

Further along the line, dividers mounted on center of conveyor separate rows of sliced buns into two groups. Dividers comprise two vertical stationary metal disks, two V-shaped plows, and moving chain that's perpendicular to conveyor.

Two pneumatically operated, reciprocating-type pusher plates load grouped buns into cartons one layer at a time to form two layers. Cartons are automatically set up by a forming machine (AMF), and conveyed, with front flap flat, to bun-loading station. Packed cartons then travel through a plow that folds open flap.

If bakery wishes simply to overwrap buns, empty cartons are not fed to Uni-Packer. Instead pusher plates load sliced buns into two stacks onto belt feeding overwrap machine.

Finally, cartons are transferred to in-feed flight of polyethylene overwrap machine (AMF). Overwrap unit consists of thermostatically controlled bottom and side heat-sealing belts.

Purpose of traveling heat-sealing belts is better closure of the poly wrap–improving on performance of stationary heat-seal plates, where poly didn't seal as efficiently.

All pneumatically operated units (feeding and releasing air pressure, 40 to 50 psi.)–are timed through combinations of cam-operated limit switches. Speeds of conveyors traveling through unit are adjustable through two Reeves' drives.

—FE Staff

Why A Rays Discolor Salt

Continued from p. 55

together with non-irradiated samples. Discoloration was exhibited by all samples, with some variation in intensity and spectrum due to differences in crystal size and shape (see lead photo). The colors varied from brown to deep purple.

Another set of seven samples of purified salt without additives was subjected to gamma radiation at different dose levels–100,000, 200,000, 500,000, 1 million, 2 million, 5 million, and 10 million rads. All of these samples were colored. However, intensity of discoloration was found to increase with increasing dosages.

Uniform Coloration

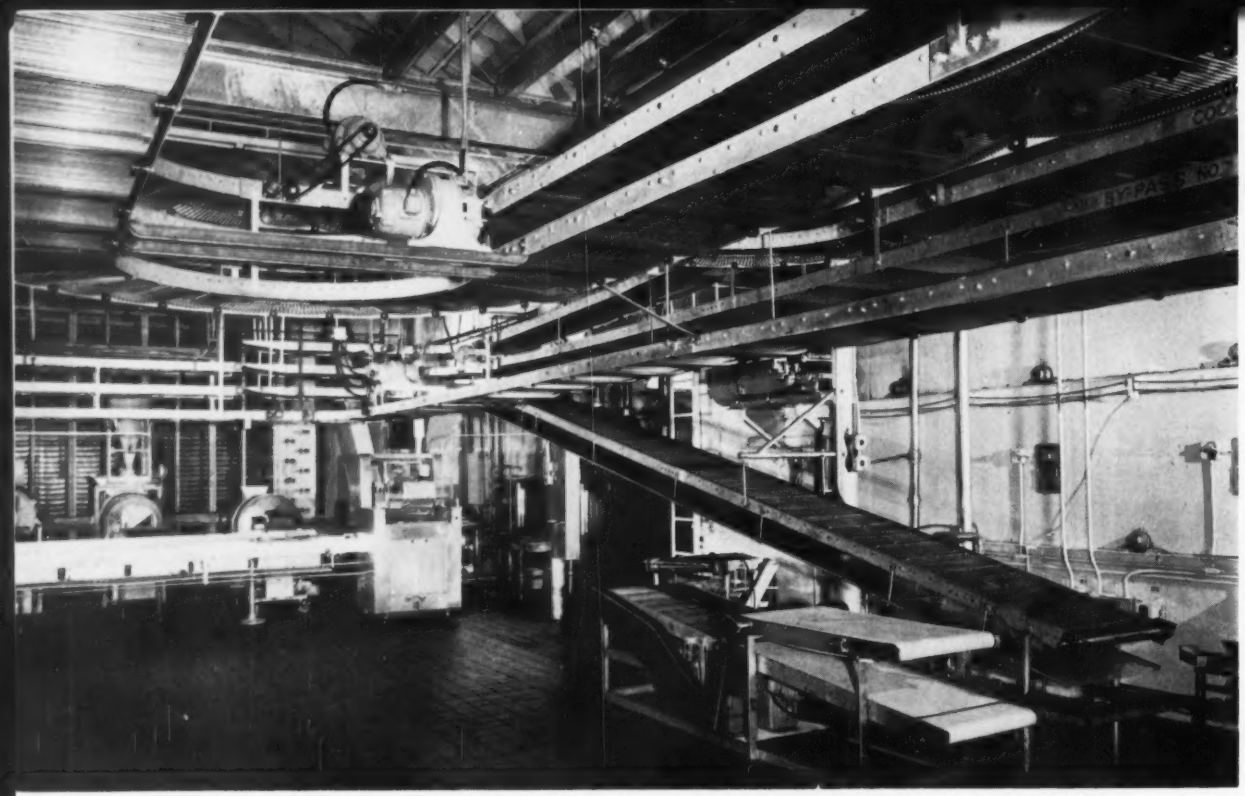
An attempt was made to obtain a quantitative relationship, but it was found that the colors were not stable. Exposure to daylight caused rapid fading and a shift in the spectrum from violet to orange to gray. Microscopic examination revealed that the coloration was not a surface phenomenon, but that the color was uniform throughout each crystal–although the color was not uniform throughout the sample.

Heating to 40C. caused the color to disappear completely and the salt assumed its original white appearance. Dissolution of the colored salt in water resulted in a colorless solution. On evaporation, white salt crystals were obtained without a trace of color.

Results indicate that this discoloration is a solid-state phenomenon due to phase transformation in the crystals when a freed electron has been trapped in an anion vacancy. Microbiological tests showed that no bacteria, yeast, or mold survived the radiation treatment. Further investigation revealed that the occurrence of microorganisms in common unirradiated salt is generally associated with the presence of organic and other impurities.

Even halophilic bacteria, which are able to grow in media containing concentrations of NaCl that inhibit all other species, require other nutrients in addition to salt. Consequently, the problem of sterilization is academic.

The authors of this article express appreciation to the Quartermaster Food Container Institute for the Armed Forces for making the arrangements for irradiation of the salt samples.



SYNCHRONIZED SPEEDS on this 600-ft. conveyor assure proper cooling. Goods taken from oven and placed on line (right) can travel full length in 25 to 100 min., as required. Shorter coffee cake cooler has a 23.3 to 93-min. run.

MANUFACTURING

Flexible Cooling Ups Capacity 35%

Pushbutton power unit synchronizes West Coast baker's conveyor lines for efficient, trouble-free production of goods. Better sanitation cited

INCREASED PRODUCTION that keeps pace with the needs of a swelling population is one of the prime aims of today's progressive food manufacturer.

And the firm which turns out more and more products without paying costly expansion bills reaps the biggest profits.

One company doing just that is Interstate Bakeries Corp., which automated existing lines at its Dolly Madison bakery in Los Angeles—thus gaining a 35% boost in capacity. Moreover, these other advantages were chalked up—

1. Improved sanitation.
2. Smoother, trouble-free operation.
3. Reduced employee fatigue.

Key to the jump is a Varidyne power unit that constantly synchronizes cooling conveyor speeds under a single adjustable control, allowing proper cooling of baked goods before icing and packaging.

Before installation of the new unit, the cooling process was necessarily a 100% manual operation. If a cake is iced while warm, it will absorb the icing and cause discoloration of both cake and icing. In addition, cake wrapped when too warm will "sweat" in the package. Cakes at Dolly Madison, after being removed from the oven, had to be stacked on metal floor racks, which were placed, in turn, under large fans for cooling.

This method required considerable floor space, and the cumbersome racks were difficult to move. The system prevented maintenance of an even flow through the production line. Naturally, production capacity was held down.

Recognizing the need for controlled, adjustable-speed, cooling conveyors, the baking firm presented its problem to U.S. Electrical Motors, Inc., Los Angeles, which found that the difficulty involved more than just varying motor speeds.

It required close coordination of all motor speeds on the conveyor, with instantaneous response of each needed simultaneously on a speed change. Also indicated was equal load-sharing between all motors.

This led to the decision to install the Varidyne-controlled cooling conveyor system. The control itself is a simple packaged unit inserted into the plant's A.C. circuit ahead of standard fixed-speed motors, converting them to adjustable speeds.

New power unit enabled the com-

pany to install two cooling conveyors, both mounted overhead. Each can be operated individually or simultaneously—that is, both can be run on the Varidyne, or one on this unit and the other on 60-cycle, 3-phase.

Cooling process begins when cakes are taken from oven and discharged onto the conveyor. Speeds at which they will travel can be regulated from 6 to 24 ft./min.

Shorter of two coolers consists of 560 lineal ft. of conveyor. An item can travel its full length in from 23 to 93 min., as required. Other runs 600 lineal ft. and can be adjusted to carry its load in 25 to 100 min. Cooling time needed depends almost entirely on product size, with large items such as a Cherry Loaf requiring 60 min. to reach the wrapping machine.

Because of the variable-frequency principle, standard types of A.C. induction motors are used as drives. Unit converts fixed power-line flow to a controlled, variable frequency of 20-100 cycles. It consists of a drive motor, alternator, and automatic exciter, all packaged to operate as a unit.

Voltage is automatically regulated at start and during frequency changes to operate standard induction motors. Frequency is varied by controlling speed of the Varidrive motor.

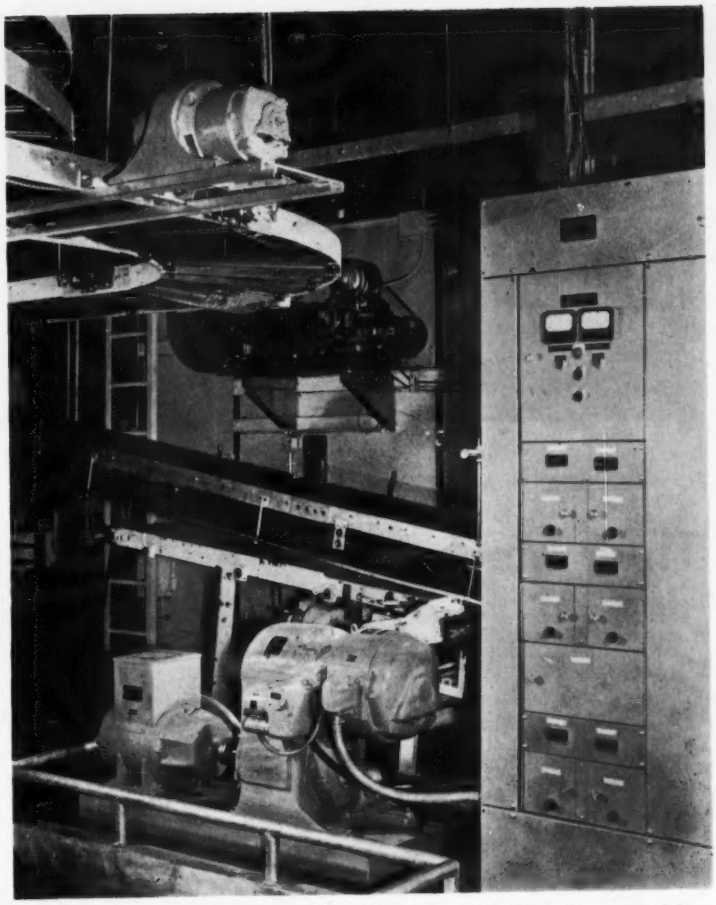
In the bakery's multi-motor application, 21 motors are connected to the same power unit, each receiving the same frequency and operating at the same speed. High-speed motors and slow-speed gearmotors on the same circuit change speeds proportionately.

Cooling conveyors operate 16 hr. daily during three shifts at the Dolly Madison plant, turning out ½ million lb. of baked goods per week.

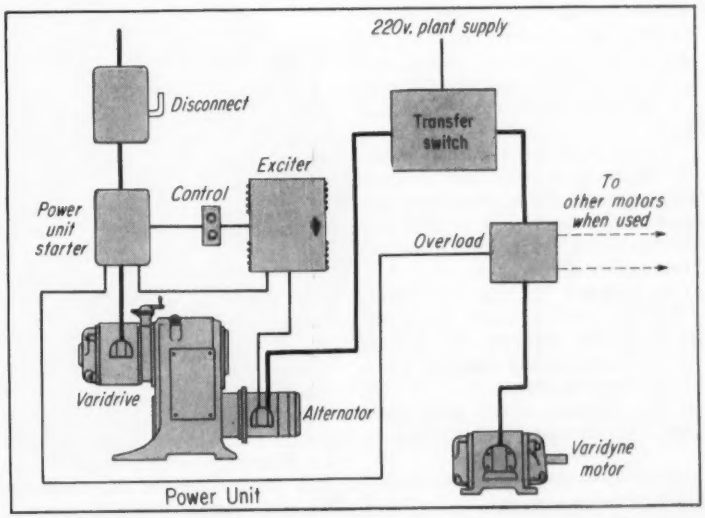
Dale Northrup, chief engineer, says increased production is due largely to the system's flexibility in handling the bakery's line of 16 items.

Overall effectiveness of the system also has enabled the bakery to conduct a much cleaner and smoother operation due to less cluttered space. In addition, officials report a virtually trouble-free operation. No major breakdowns have been reported since installation.

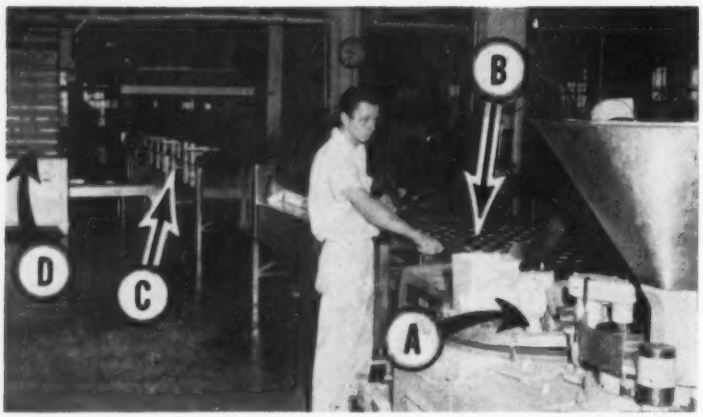
Paralleling the modernizing process is the reduction of employee fatigue. The firm reports it is still benefitting from the rewards of improved working conditions and employee satisfaction. —*End*



HEART OF SYSTEM is this packaged power unit, consisting of a drive motor, alternator, and automatic exciter.



HOOKUP reveals automation elements. Drive motors permanently connected to power unit permit start button to activate whole system in same speed. All motors are connected for 220v. operation.



ON THIS CONTINUOUS LINE, dough pieces coming from divider-rounder (A) are deposited on grill-plate-mounted forming rings (B) traveling through proofer and griddle (C). After one pass through griddle, muffiins are automatically flipped before making another pass. They're then discharged from griddle and elevated onto double-tier continuous cooling belts (D).

Their Mechanizing Boosts Volume —*And Quality, Too*

New Chicago bakery makes muffin operations nearly automatic. Triples output, halves man-hours and production space

MANUAL OPERATIONS have been largely eliminated in the new plant built by Casey's English Muffin Co., strategically located 6 miles north of Chicago's Loop.

Abolished are the old multiple manual handlings in loading and unloading racks, moving racks in and out of the proof box, sifting corn meal onto dough, and turning muffins (flapjack style) on a battery of grills.

A new continuous proofer-griddle (E. M. Noel Co.) now does the once-tedious tasks. It's tripled hourly production (up from 200 to 600 doz. muffins)—and with half as much personnel and floor space.

In addition to sharper working efficiency, goals included more uniform quality muffins and volume output keyed to the company's new streamlined marketing (FE Nov. '59, p. 66). Already, a new sales force, operating through brokers, has extended the radius of distribution. And the program has seen packaging improved, product shelf-life augmented, and P-O-P display promotions stepped up to win more customers.

FRANK P. MUELLER

National Sales Manager, Casey's English Muffin Co. (Subsidiary of Newly Weds Baking Co., Inc.), Chicago

Down to Details

Now for a closeup of the new operations: Muffin pre-mix is blended in a ribbon-type mixer (2,000-lb.). Premix (handled in palletized 100-lb. bags) is then charged into dough mixer along with water and yeast. Mixer produces three 200-lb. batches hourly, with the dough dumped into bowl for electric-hoist delivery to hopper feeding rotary 12-pocket divider and rounder (Read). Dough pieces are dusted with corn meal as they are conveyed to feed end of continuous proofer-griddle.

Next, pieces are deposited into 12-pocket-wide forming rings mounted on 6-in.-wide evenly spaced metal grill plates that are chain-conveyed through proofer. Stainless steel-housed proofer (4⅓x60-ft.) requires no temperature controls. Heat is retained by ring-mounted, chain-driven grill plates returning (at pre-set speed) from continuous griddle.

Inside proofer (griddle as well), another chain-driven conveyor with 6-in.-wide grill plates—but no forming rings—flattens top of muffins.

After a short proofing, chain belt carries muffins through a gas-fired griddle (4⅓x20-ft.). At end of this run, muffins are automatically flipped over onto still another return chain-driven set of evenly spaced griddle plates—with multi-pocket rings serving as formers to keep muffins uniform in shape. As a safeguard, there's an electrical interlock between motor driving conveyors and solenoid valve to gas line.

Following a 10-ft. inclined travel, the two conveyors separate, freeing muffins from rings. Top conveyor then returns to feed end of proofer for refilling with dusted dough pieces, while transfer conveyor discharges muffins onto canvas belt feeding fork-type elevator going to cooling conveyor. There's an additional cooling as return belt feeds packaging line.

The packages are locking-type trays that are machine-formed (Package Machinery). Two girls hand-pack them with six muffins each. Trays then proceed to cellophane-overwrapping machine (Package Machinery), after which they are loaded into shipping cases that are finally glue-sealed. —*End*

CIRCLE 65 ON READER SERVICE CARD→

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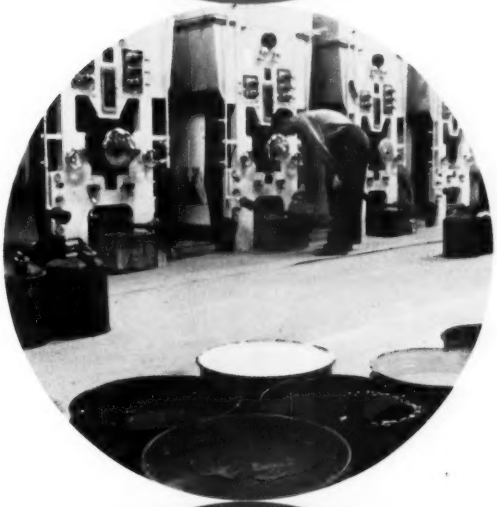

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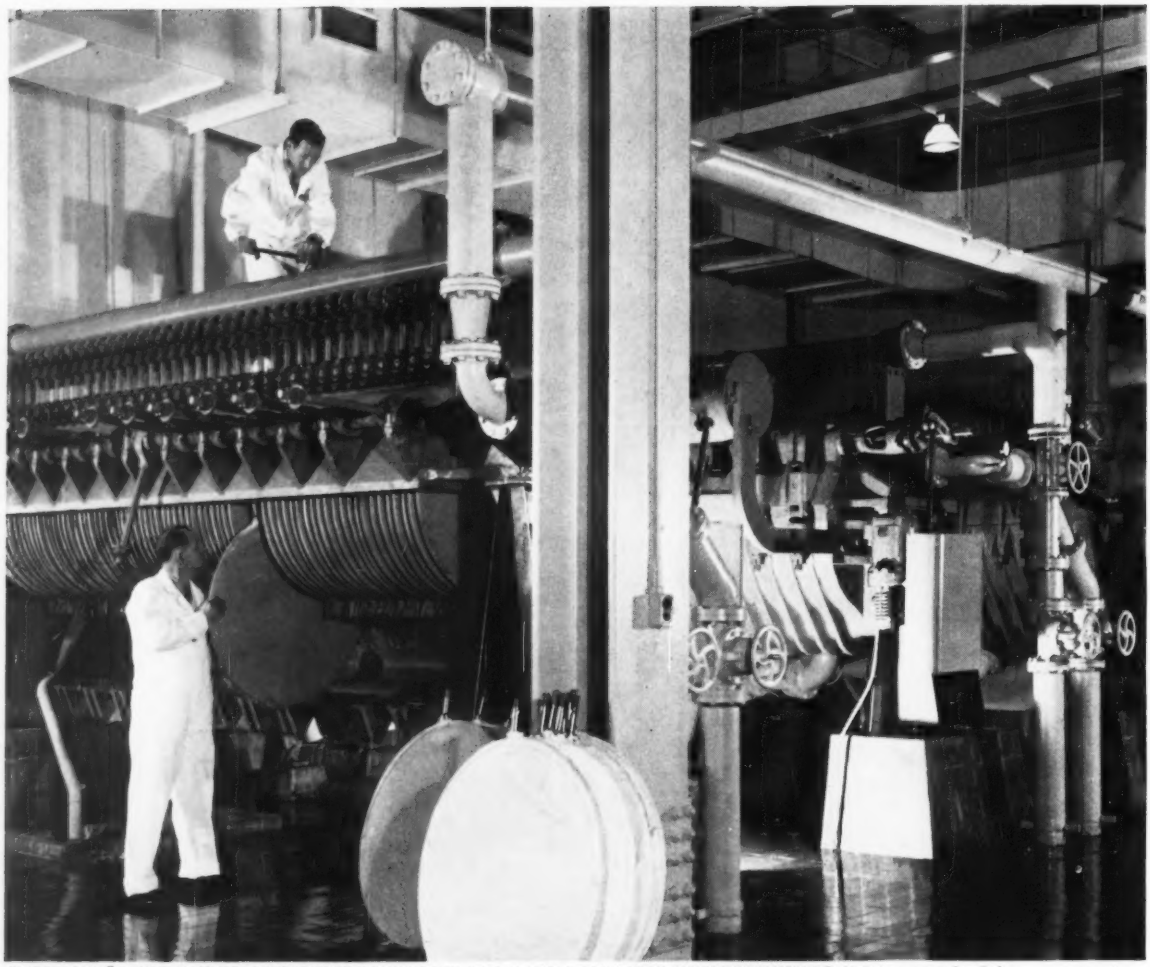


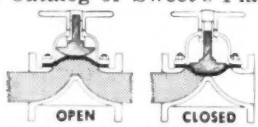
SWEETLAND® PRESSES AT REDPATH SUGAR EQUIPPED WITH GRINNELL-SAUNDERS DIAPHRAGM VALVES–At this stage of refining, raw sugar has already been washed, dissolved, mixed with lime — and the lime and impurities in sugar precipitated with carbon dioxide gas. The resultant mixture is filtered through the Sweetland press to remove precipitant. Workmen are shown replacing the leaves in one of the Redpath Sweetlands.

Keeps sugar crystals from abrading working mechanism, avoids valve sticking, and prevents product leakage

A big problem in refining sugar is to prevent damage to the working mechanism of the usual type of valve by the eroding action of sugar crystals. Failure to do this means that sooner or later valves won't close tightly — resulting in messy, unsanitary, costly-to-repair leaks.

At Canada and Dominion Sugar Company's Redpath Refinery, in Toronto, Canada, Grinnell-Saunders Diaphragm Valves help avoid these problems. The diaphragm separates working parts from the fluid stream — preventing erosion of valve mechanisms on the one hand, and sticky or "frozen" valves on the other.

Grinnell-Saunders Diaphragm Valves are available in a wide range of body, lining and diaphragm materials. For more details, see Grinnell's insert in Chemical Engineering Catalog or Sweet's Plant Engineering File — or communicate with the Grinnell Company.



*Sweetland is a registered trade-mark Dorr-Oliver, Incorporated

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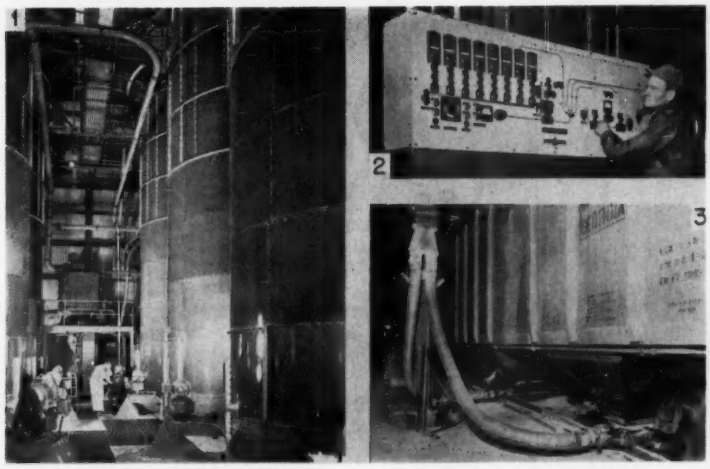

HIGHLIGHTS in NJFM's advanced flour routine. Flow to and from spic-and-span bins (1) is controlled by pushbuttons on graphic panel (2). Arriving at baker's plant (3), Airslide carload of flour is speedily blown into reception bins.

Bulk-Handling Orbit Widens

Greater speed and efficiency translate into cash savings for expanding circle of flour suppliers and users . . . New Jersey operation shows pattern

MORE AND MORE operators are making strides through modern bulk storing, blending, and delivering of flour. Prominent attraction is the ledger benefit: Savings ranging upward of 30¢ a cwt. are seen realized by both miller and baker.

Railside companies get bulk flour via Airslide cars (now used by 23 major railroads). And concerns away from rail lines (an estimated 70% of the nation's bakeries, accounting for 40% of total flour consumption) are supplied by the rapidly expanding truck fleets. Portable transfer bins also play a rising role.

Exemplifying top-efficient 'round-the-clock service with both cars and trucks is New Jersey Flour Mills, Clifton, N. J. Using Fuller pumps, truckloads of bulk flour are speedily 'streamed in' to customers who can take 50,000 lb. at a time. A bakery's outlay for such reception bins is soon offset by delivery and handling savings.

The New Jersey supplier's combined storage capacity is 50,000 cwt. Flour is fed off as required, from any one of eight new 2,500-cwt. Permaglas bulk-storage units (A. O. Smith Co.).

Use of the cylindrical glass-lined bins has multiplied efficiency. Employment of the larger-diameter bins without hoppers was engineered with use of automatic sweep-arm unloaders.

Flour movements are controlled from a one-man-operated electronic panel (Sprout-Waldron). Assured is orderly flow-in and flow-out. By pushing buttons, the panel man initiates the air-conveying of flour into bins, or from bins through stainless steel tubes to Airslide or portable-bin cars or to bulk trucks.

Loading out is exceptionally fast—500 cwt. per hr. Thus, an average car can be filled in less than 2 hr., a bulk truck in less than 1.

In feed-off, the sweep-arm units first move flour into 1-ton surge bins. From here, Draver Micro-Master wing-type feeders meter the flour into a 50-ft.-long Sprout-Waldron mixing and blending conveyor unit. Pneumatic tubes whisk the flour to delivery docks.

This new setup, declares New Jersey Flour Mills, makes not only for new cleanliness but also improves the flour. It cites tests of cereal chemists showing bulk flour to have better color and less moisture due to the agitation and aeration received in this type system.

—FE Staff

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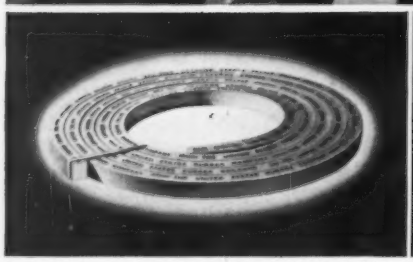
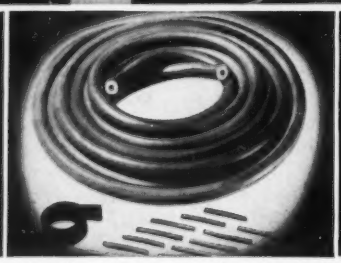
CIRCLE 67 ON READER SERVICE CARD

Cooker Door Gaskets

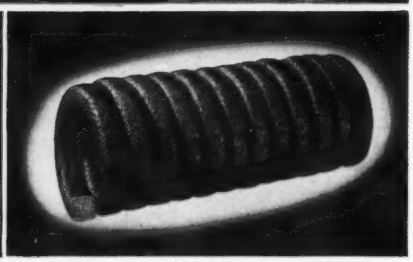
For Hot Cooking up to 350°



U. S. Peerless® Canvas Pump Packing (Style #463) is for use on inside packed pumps against hot or cold water, and for end rings in hydraulic sets. The method of manufacture reduces swelling to the minimum.



U. S. Eclipse® Red Tubular Gasketing (Style #803) is recommended especially for large exhaust heater doors and kettles where a large gasket is needed.



U.S. Rain-Besto® High-Pressure Rod and Plunger Packing (Style #101) handles high-pressure steam and air up to 500 degress F. It has a non-hardening cushion, treated with heat-resistant lubricants and preservatives.

U.S. Cooker Door Gaskets are especially designed for the food-processing industry . . . ideal to use on retort doors for pressure cooking, even up to 350°F. Being chemically inert, they also are fine gaskets for vats and kettles when cooking or processing soups, spaghetti, vegetables, pre-cooked meats, vegetable shortenings, and detergents. In all, U.S. Cooker Door Gaskets provide the food industry with a maximum of cooking cycles, lowering costs by eliminating the need for frequent replacements. Insist on U.S. Cooker Door Gaskets when replacing your present ones.

• • •

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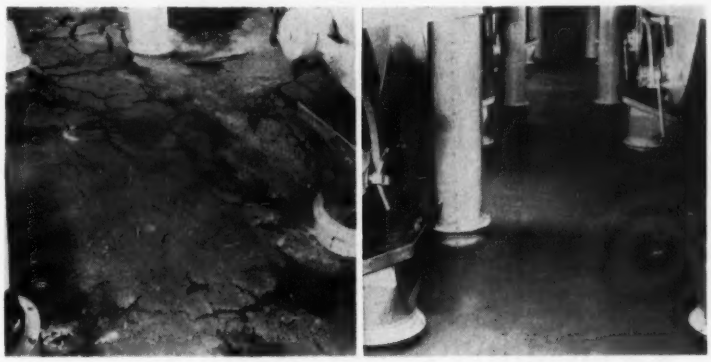
Reels Up Efficiency, Sanitation

Handling and storage of hoses for washing down floors and equipment in food plants is a vital production job. If they are permitted to lie on the floor, they can be damaged by trucks and, also, create unsanitary conditions.

So when Peter Eckrich & Sons, Ft. Wayne, Ind. meat packer decided to expand processing facilities, hose handling and storage were given top consideration. Since coiling on hooks had not been entirely satisfactory company decided to try reels.

Seven spring retractable reels (C. B. Hannay & Son, Westerlo, N. Y.) were mounted overhead in the new area. Each of these reels handles 60 ft. of ½ in. I.D. hose used for water at 75 psi.

Following more than 1 yr., plant engineer Del Proctor reports that: (1) Hose handling time has been cut 50%; (2) both sanitary and safety conditions are improved, and (3) hose wear and damage has been greatly reduced.

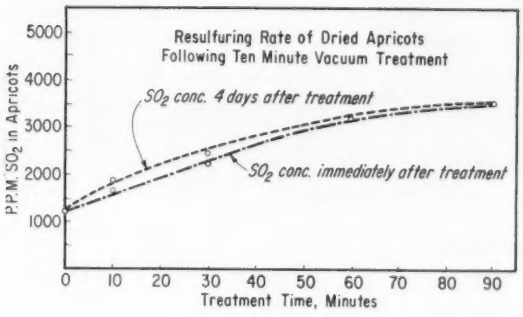


Floor Topping Stops Concrete Erosion

When sugar solutions and enzymes from corn pulp played havoc with the concrete floor in corn grinding area of large midwestern food processing plant (left photo), floor was repaired with a Neoprene coating (Dex-O-Tex, Du Pont).

Before application, surface was scrubbed with chemical solutions. Loosened concrete was chipped off, cracks and voids filled with special underlayment. Then a ¼-in. of coating was troweled on.

Now, 2-yr. later, the surface shows no signs of wear (right photo). The new flooring is completely unaffected by sugar solutions, and is readily cleaned by hosing. Moreover, it is non-slip wet or dry, a real contribution to plant safety.

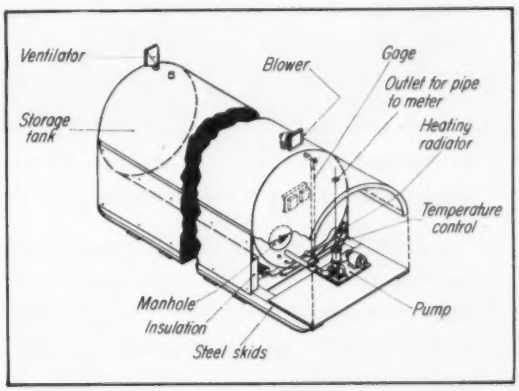


Vacuum Chamber Aids Resulfuring

Dried fruits with less than desired SO_2 concentrations may be easily resulfured by use of a vacuum chamber, in which they are placed and subjected to a 27-28 in. vacuum for 10 min. Then vacuum is released with SO_2 gas and the chamber kept closed until desired SO_2 concentration in fruit is reached.

Accompanying graph shows SO_2 uptake in dried apricots with initial concentration of 1200 ppm., and 20% moisture. Similar graphs could easily be produced for other fruits. If resulfured fruit is packed in gastight containers a slight additional gas adsorption will occur.

With water sealed vacuum pumps, excess SO_2 may be vented to sewer by restarting pump and opening a valve to admit air to chamber. After 20-30 sec. chamber may be opened without transferring objectionable SO_2 odors to plant.—*J. A. Kitson, Food Technologist, Research Station, Dept. of Agr., Summerland, B.C.*



Portable Corn-Syrup Storage Unit Solves Difficult Handling Problem

Users of corn syrup are frequently faced with sticky problems that tend to offset many of the advantages of the product.

To overcome these, the A. E. Staley Mfg. Co., Decatur, Ill., has developed a special portable system (drawing) that offers unique handling and sanitary features.

Unit is available in 2,500, 3,000 and 4,000-gal. sizes. It is mounted on steel skids (steel legs are also available) so unit can be installed wherever convenient in user's plant.

Interior of storage tanks are sand blasted, then lined and relined with a sanitary coating.

Add up your total cleaning costs...

$ time

$ production loss

$ equipment wear

$ cleaning materials

and see how you save with

OAKITE SPEED-CLEANING

Take a new hard look at any cleaning job in your plant. Notice how the big costs are hidden at first—the time it takes... equipment out of production... possible damage to equipment. Compared with these major costs, the material itself is a minor cost.

That's why buying a cleaning material at price-per-pound can be the most expensive way in the end. It's why safe Oakite speed-cleaning gives you low-cost end results—always.

And here's an interesting point. Consider the low concentration you need with an Oakite compound compared with an ordinary cleaning material, then figure the cost *per gallon of solution*. It turns out that you save even here—that Oakite quality compounds actually cost less!

Find out about the big benefits that go with Oakite methods and materials, Oakite service and know-how. Call your local Oakite man or write for free booklet on food plant sanitation to Oakite Products, Inc., 26G Rector Street, New York 6, N. Y.

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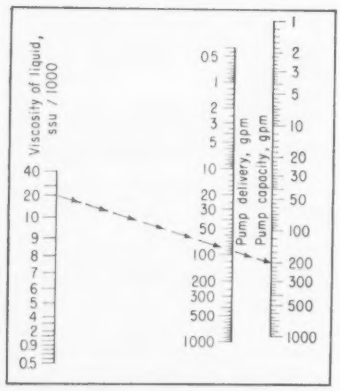
Simple Paddle-Wheel Unit Solves Feeding Problem

For most efficient operation, green beans must be fed to French-style slicers in uniform, acceptable volume.

Birds Eye, Wayland, N.Y., had long sought an efficient way to feed these units. Company had tried manual feeding and one type of "rake-off" machine with little success.

Solution to the problem was the development by two employees, M. Wolfanger and J. Abplanalp, of a special device (photo). Comprising a gear-head motor and a four-blade (rubber) paddle-wheel, the unit is suspended so it just clears product supply belt. It may be moved to any position across the belt by loosening 2-bolts and sliding the unit on its suspension rod.—*GF News, Oct. 1959.*

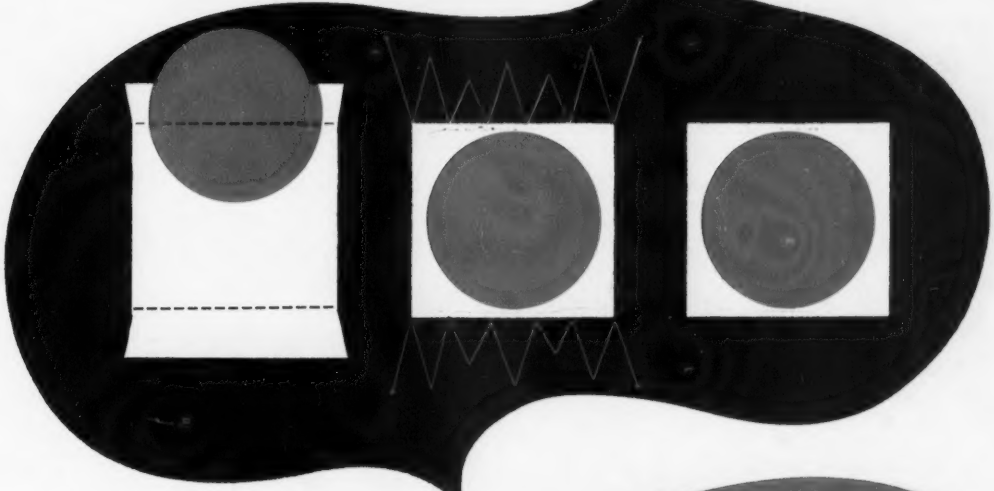


Computing Pump Capacity For Viscous Liquids

Many internal-gear, rotary pump manufacturers recommend reducing rotative speed when handling liquids above 500 SSU viscosity. Since capacity of such a pump varies with

PACK IT

WITH RADIO WAVES



CCA's new Di-Electric Sealer positively seals cartons by the heating action of radio waves on cold glue.... High-frequency waves eliminate de-waxing necessary with conventional sealing methods—and unwieldy overwraps. Provides fast, smooth production, plus protection and merchandising advantages. To **pack it—move it—sell it** is the business of CCA packaging. For details...

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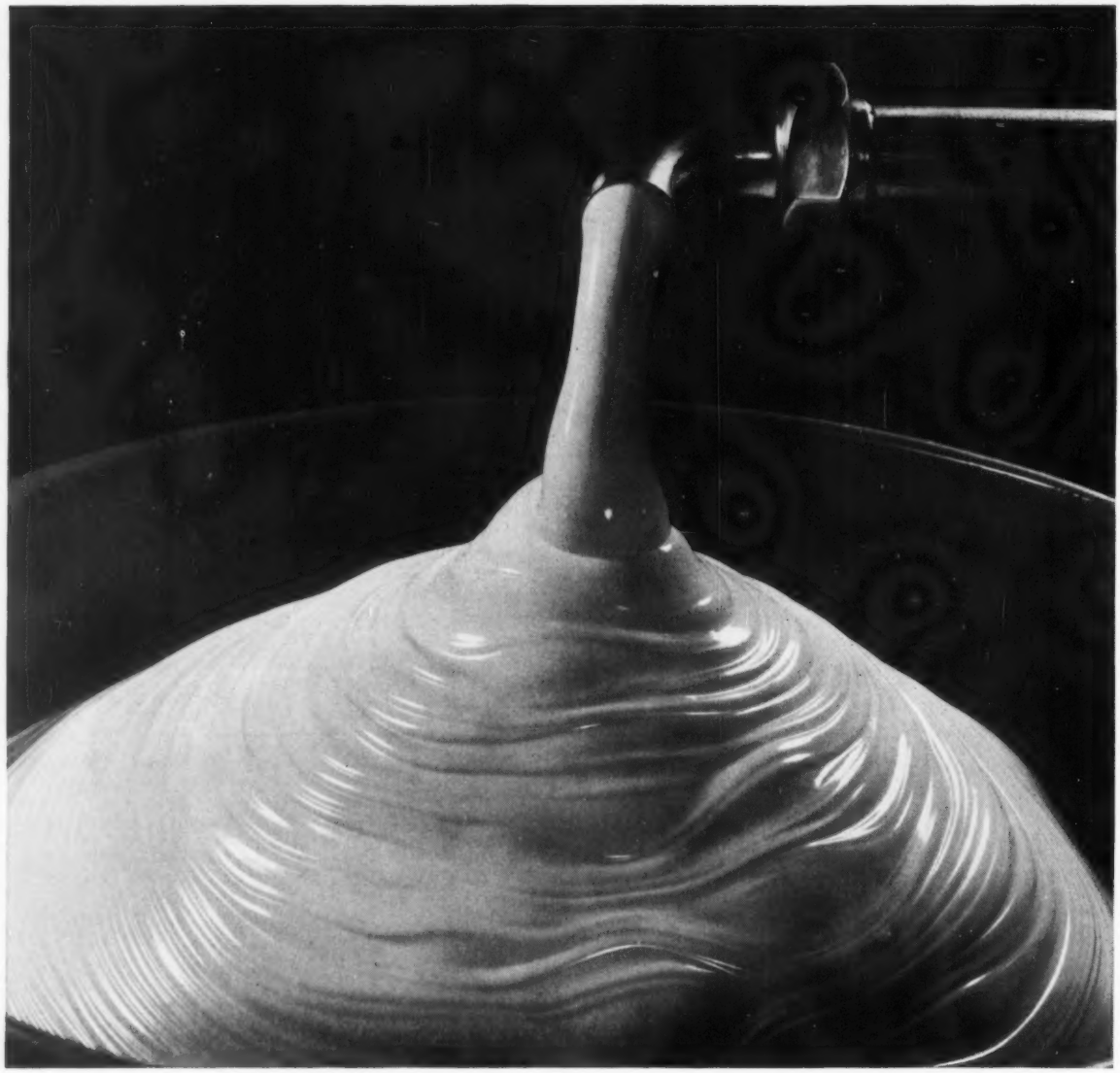

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Also . . . vitamin A in bulk for foods and pharmaceuticals

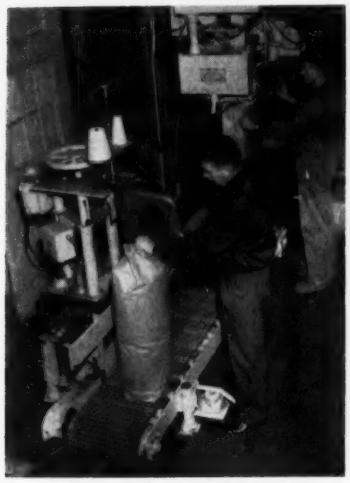
Distillation Products Industries *is a division of* **Eastman Kodak Company**

its rotative speed, accompanying chart permits easy computation of actual pump delivery when handling viscous liquids.

Example: An internal-gear pump rated at 200 gpm. is handling molasses (viscosity of 20,000 SSU), what would it deliver if speed is reduced to prevent overloading?

Solution: Enter chart at the viscosity of 20,000 SSU (left) and draw straight line to rated capacity (200 gpm. right). At intersection with central scale read pump delivery as 90 gpm.

Chart is based on D=FR, where D=actual pump delivery to prevent overloading, gpm; F=a factor depending on viscosity of liquid handled, recommended by the Hydraulic Institute; R=rated capacity of internal gear pump, gpm. For liquids of 500 SSU or less delivery is same as rated capacity.—*Tyler Hicks, Hicksville, N. Y.*



New System Slashes Costs

Significant economies usually result when hand-packing lines are mechanized. An outstanding example is Ocean Spray Cranberries, Inc., Hanson, Mass., where savings from the I & C bagger (photo) paid for the equipment in one season.

This single line, manned by two men, replaced the former three lines requiring 11-men. Moreover, it enabled use of a less costly bag—a 2-ply, water repellent, wet strength paper (Union Bag-Camp Paper Corp.) instead of a 4-ply paper for this 60-lb. package. Also the new system weighs within ∓3-oz., compared to a variance of 4-lb., recorded by former lines.

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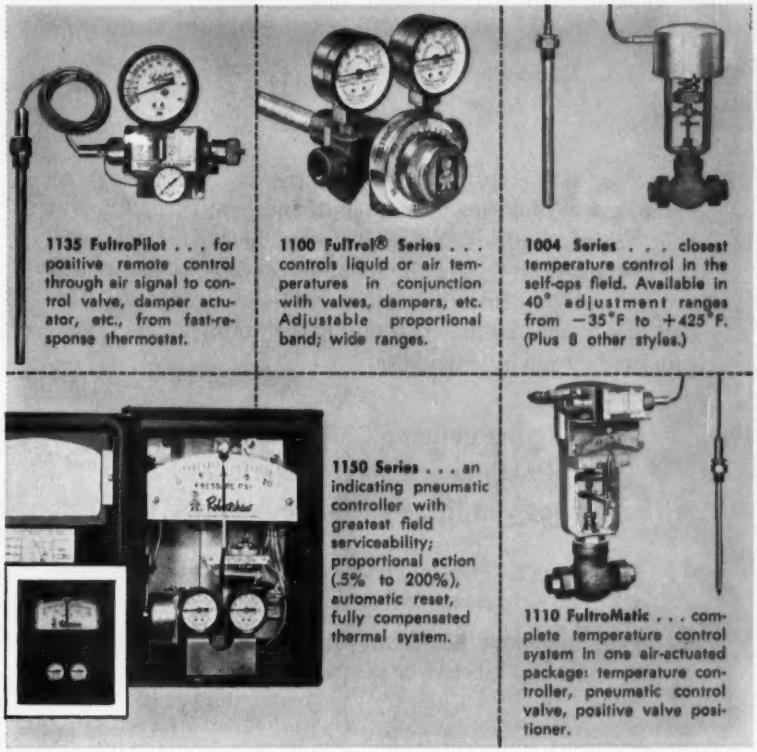

1135 FultroPilot . . . for positive remote control through air signal to control valve, damper actuator, etc., from fast-response thermostat.

1100 FulTrol® Series . . . controls liquid or air temperatures in conjunction with valves, dampers, etc. Adjustable proportional band; wide ranges.

1004 Series . . . closest temperature control in the self-ops field. Available in 40° adjustment ranges from −35°F to +425°F. (Plus 8 other styles.)

1150 Series . . . an indicating pneumatic controller with greatest field serviceability; proportional action (.5% to 200%), automatic reset, fully compensated thermal system.

1110 FultroMatic . . . complete temperature control system in one air-actuated package: temperature controller, pneumatic control valve, positive valve positioner.

From the rugged simplicity of self-ops to the more complicated requirements of an indicating controller, Robertshaw answers your temperature control needs — efficiently and economically.

And whichever Robertshaw instrument best fits your particular job, you know there's quality all the way . . . quality of design, construction, performance.

Check the Robertshaw temperature and pressure controls for *your* needs. You'll find them shown in detail in Catalog A-LG. **Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.**

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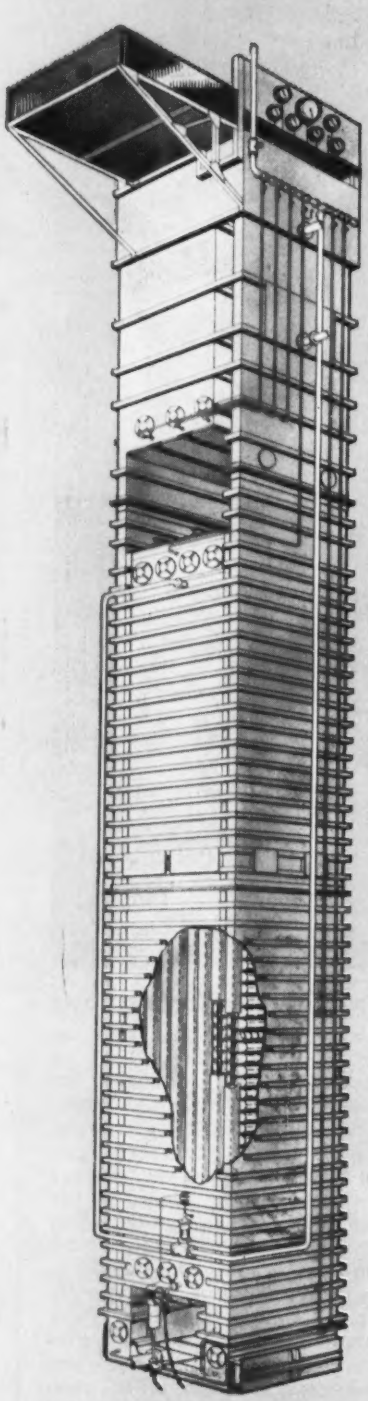
MR. CONTROLS

CIRCLE 73 ON READER SERVICE CARD

Now, from France, for your plant and profits

. . . a sensational (and proved) saving step in canning!



For a long time, continuous pressure cooking and cooling presented many problems in mechanics and heat exchange. *But now, a revolution from France!* Introduced just a few years ago, the genuine CARVALLO hydrostatic continuous cooker and cooler has been constantly tested, refined and improved. Today, it is considered the finest unit in the world, matching your own product quality standards.

Only the genuine CARVALLO hydrostatic pressure cooker-cooler gives you these exclusive features...

1. **Preheating and Cooling under Integral Counter Flow** saves up to 80% in steam and cooling water.
2. **Fully Automatic Self-controlled Unit,** directly coupled to seamers and labelers or casers, saves 100% in processing labor.
3. **Specially Designed Chains** are rugged, durable. Do not stretch or wear. The end of the carriers are closed by the chains, preventing jamming and lateral friction and damage to the cans and jars.
4. **Hydrostatic Controlled Pressure** insures an absolutely constant temperature during sterilization, eliminates transfer valves and all their troubles. Pressure variations inside and outside of cans are progressive! No exploded peas! No clouded juices! No leaking seams!
5. **Tubular Carriers Unattached to the Conveying Chains** — the same unit can process, without any change parts, cans, jars or bottles in a wide range of sizes and shapes. No jamming through dented cans or broken jars. Easy automatic loading and unloading. Carriers can be removed very quickly for yearly inspection.

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LA COURNEUVE (Seine)

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. . . Silver chloride electrode

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. . . Flame chromatograph

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Using streamlined setup, you get fast, precise answers direct from a staff technician—who hurdles old complex analyses with striking new instruments and speedier techniques

IT'S PARAMOUNT that our industry quickly turn back the threat of "food contamination" by so-called additives.

Here's the picture—

☛ **Dairymen** are concerned with antibiotics from injection or feeds, pesticides from spraying feed crops or barns, wax migrating from cartons, antistick coatings applied to glass bottles during manufacture, grease and mineral oil from equipment.

☛ **Canners and freezers** are worried primarily about pesticide residues, although cartons and cans are other possible sources.

☛ **Meat packers** are plagued by visions of insecticide, fungicide, or weed killer residues, and antibiotics from feeds that may show up in tissues of the slaughtered animals.

☛ **Cereal manufacturers** are likewise concerned with pesticide residues originating mainly from the spraying of crops.

☛ **Brewers, bakers and candy makers** have less to worry about since they use mostly refined products.

But they all must consider added ingredients such as flavors, colors, emulsifiers, shortenings, coatings, etc. which have not as yet been cleared by FDA. Also, wrapping materials, inks and adhesives on them, microcrystalline and paraffin waxes for coating products such as cheeses, detergents and sanitizing agents, and many others.

A further complicating factor is the ability of some plants and warm-blooded animals to change additives into products that are, in some cases, more active than their parent chemicals.

It is readily apparent, therefore, that all branches of the food industry urgently need speedy, accurate techniques for determining presence of these "additives" to the less than parts-per-million level required by the Food Additive Amendment of 1958.

Instrument Men to Rescue

Fortunately, research laboratories and instrument manufacturers have made giant strides in the last few

TESTING FOR ADDITIVES

ARTHUR V. GEMMILL
Senior Associate Editor, "Food Engineering"

←CIRCLE 74 ON READER SERVICE CARD

TESTING FOR ADDITIVES

years. These have resulted in development of new, simpler methods, new and improved instruments that enable QC technicians to perform the needed analyses within a reasonable time.

To assist food plant QC men in selection of methods and instruments to fit their particular needs, the editors of FE have compiled this report. First in brief fashion, the various techniques are discussed. Then, instruments and methods are comprehensively covered.

Focus On New Techniques

W. H. BUTZ

Beckman Instruments, Inc., Fullerton, Calif.

STRINGENT responsibilities have been placed on food company quality control laboratories by the Food Additive Amendment of 1958.

These laboratories now face the problems of controlling intentional additives to within established tolerances, and preventing incorporation of unintentional ones from packaging materials, raw products, process equipment, or prepared ingredients.

The analytical problems faced today by food manufacturers are extremely complex and involve QC personnel in areas previously limited to research laboratories.

In addition to routine testing of raw products, packaging materials, and prepared ingredients for intentional additives, the QC lab must also consider the use of new additives.

Most of the long-range toxicity testing is done by the basic supplier. However, many ingredients and packaging materials are used by food plants in such small volumes that the basic supplier will not perform the required clearance work. Under these conditions, the food manufacturer usually will conduct extraction tests to determine if food additives are being intentionally incorporated in his product.

Detecting Small Amounts

As a result, technical staffs have been investigating new and more rapid analytical techniques which are sensitive to parts per million as required by the new regulation.

These new methods are derived chiefly from application of various forms of spectroscopy and chromatography. Modern scientific instruments utilizing these principles have been developed to a point where their use by staff technicians is practical. Dependable instruments with preset operational parameters have been designed which operate with a minimum of adjustment, and require little maintenance.

Colorimeter Use Limited

Simplest and most widely used for analysis of food additives is the colorimeter. It is relatively inexpensive ($200-$800), and has many published applications. Principal disadvantages is that the color coupling reaction is not specific for the entire molecule but for only an active group. Therefore, extensive cleanup and extraction work must be done on the sample to remove interfering compounds.

Considerable interest has developed in use of more specific methods such as ultraviolet and infra-red spectroscopy. Absorption in the UV is due to energy changes in valence electrons at double and triple bonds. Therefore, compounds having different bonding will exhibit characteristic absorption spectra. UV absorption analysis does not require formation of a colored compound and, when interfering materials are present, a wavelength often can be selected to eliminate the interference. These procedures have been proposed for antioxidants such as BHA in lard.

The techniques require a minimum of cleanup, and interference is considerably less than with colorimetric methods. Cost of UV spectrophotometers ranges $3000-$10,000. However, a low-cost double beam recording instrument has recently been announced by Beckman.

IR and GC Extend Scope

Infra-red spectroscopy has been handicapped by high instrument cost, and degree of skill required for effective operation. Introduction of less expensive ($5,000) units with simplified controls has opened up an entirely new field of analysis.

IR spectroscopy has probably found its widest use in qualitative analysis. The IR spectra of an unknown material is compared against a series of known spectra until a match is found. This has been called the "fingerprint method". Often it isn't necessary to know the exact identity of the compound, and characteristic absorption peaks will tell if the unknown is an aldehyde, ketone, alcohol, or other such class of compounds.

The actual colorimetric test is often very simple and can be done in a short time.

As in other forms of spectroscopy, IR absorption can be used for quantitative analysis after calibration with

Numerous Aids Available

The food manufacturer has several sources of assistance for solving his analytical problems. Many trade associations have been actively working in the field of food additive analysis for some time. They can give help to their members in developing practical control techniques.

Several of the major suppliers have well equipped laboratories staffed by trained analytical chemists. Some have published excellent series of analytical procedures for use in the control of their products.

Agricultural experimental stations are an excellent source of techniques and information on the analysis of pesticide residuals. Most are equipped with advanced instrumentation, and are willing to help food manufacturers who are interested in establishing pesticide residue laboratories.

Several private consulting laboratories have established food additive departments for assisting the food manufacturer in control of his product. These organizations will analyze samples and assist the manufacturer in solving technical problems.—*W.H.B.*

a series of known standards. Absorption at significant wavelengths is used to measure the concentration of the unknown.

IR analysis has been very useful in identifying extractables from packaging materials. Many considered for use in contact with food can be eliminated when it is shown by IR spectrophotometry that the materials are extractable by common solvents occurring in foods.

Recently, considerable interest has been shown in use of gas chromatography for analysis of pesticide residuals. This technique has been considered both as a preliminary separation method and as a quantitative procedure. For cleanup and extraction, preparative GC (5-10 mil.) provides extremely pure samples which can be used for identification with previously mentioned techniques, especially IR spectroscopy.

Ionization detectors have extended range of sensitivity of GC down to fractional parts per million (FE July '59, p. 82). GC is a relatively low cost ($1,500-$2,500) tool which should find wide application in additive analysis.

Electrochemical Methods

A discussion of instruments for food additive analysis would not be complete without mention of the numerous electrochemical methods which have been utilized. Of particular interest is the silver-silver chloride electrode which can be used for detection of small amounts of chloride derived from chlorinated hydrocarbon pesticides.

Considerable work is being done in development of electrodes that are specific for a particular ion. With these, analyzers can be built that provide rapid low cost analysis for routine repetitive use. Such systems require only injection of the sample into the system for analysis.

It is indeed fortunate that rapid advances in instrumental methods of analysis have taken place within the last few years. These provide the food industry with the tools required to prevent adulteration of their products in terms of the Federal Food Regulations.

The analytical problems created by the Food Additive Amendment are not unsolvable. However, they do open up an entirely new area of responsibility for the food manufacturer.

Turn page

TABLE I—WORKING CHECKLIST for Spotting and Gaging Additives.

Materials	Suggested Method of Analysis	Pretreatment Required	Example
Chlorinated hydrocarbon pesticides	Electrochemistry, coulometry, colorimetry	Extraction, cleanup	Lindane
Organic phosphate pesticides	Colorimetry, infra-red spectroscopy	Extraction, cleanup	Parathion
Antifoam agents	Infra-red spectroscopy, colorimetry	Extraction	Silicones
Residual solvent	Gas chromatography	None	Hexane, trichloroethylene, 10 ppm.
Detergents.....	Colorimetry	Extraction, cleanup	Sodium dodecylbenzene sulfonate, 2 ppm.
Preservatives	Colorimetry	Extraction cleanup	Sodium nitrate, 10 ppm.
Stabilizers	Colorimetry	Extraction cleanup	Sodium lauryl sulfate, 125 ppm.
Emulsifiers	Infra-red spectroscopy	None	Polyethylene glycol 400 monooleate, 10%
Sequestrants	Colorimetry	Extraction cleanup	Calcium disodium ethylene-diamine tetra-acetic acid dihydrate, 25–75 ppm.
Flavors	Gas chromatography, infra-red spectroscopy	None	Imitation cassia oil
Packaging films	Infra-red spectroscopy	None	Polyethylene
Chewing gum base	Infra-red spectroscopy	None	Butyl rubber
Fruit coatings	Infra-red spectro-photometry	Extraction	Mineral oil 35–150 ppm.
Waxes	Ultraviolet spectro-photometry	None	Microcrystalline
Adhesive migrants	Ultraviolet Spectro-photometry	Extraction	Cellusolve phenol
Can lining migrants	Infra-red spectro-photometry	Extraction	Polyvinylidene chloride
Migrants from cello-phane film	Infra-red spectro-photometry	Extraction	Dibutyl phthalate 2.17% in film
Lubricants	Infra-red spectro-photometry, gas chromatography	Stripping	Kerosene with fatty alcohols on tinplate
Feed additives	Colorimetry	Extraction, cleanup	Reserpine 2 ppm.
Boiler compounds	Colorimetry infra-red	Extraction cleanup	Octadecylamine 3 ppm
Antioxidants	Ultraviolet spectro-photometry	Extraction	Butylated hydroxyanisole 0 001%
Increasing enzymatic activity	Infra-red spectro-photometry	Extraction, cleanup	Gibberellic acid 2 ppm
Monoglycerides	Gas chromatography	None	Distilled acetylated monoglycerides in fats 5% by weight
Inhibitors	Infra-red spectro-photometry	None	Oxystearin in salad oils 1,250 ppm
Thickeners	Infra-red spectro-photometry	Extraction, cleanup	Propylene gycol ether of methyl cellulose

ELECTROCHEMICAL INSTRUMENTS like this expanded scale pH meter, increase readability 7-fold over standard scale units. Incorporated are transistors, etched circuits and drift-free chopper amplifier.

COLORIMETRIC TECHNIQUES are becoming more specific and sensitive in ranges below ppm. Newer reagents are forming more selective and better color-absorbing compounds.

What New Instruments Do

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"

HOW CAN ANALYSTS prevent another "cranberryizing" situation in the food industry?

This was the underlying theme at meeting after meeting and at workshop sessions on the latest instrumental methods for analysis of food additives held at Michigan State U. Symposium was sponsored jointly by Michigan State, National Canners Assn., American Meat Institute Foundation, and Packaging Institute, under chairmanships of H. J. Noebels and W. H. Butz, Beckman Instruments, Inc.

Important among instrumental methods discussed and demonstrated were those utilizing selective absorption of radiant energy by substances. These spectrophotometric methods (ultraviolet, visible and infra-red) are noted for their sensitivity and selectivity – properties essential for measuring small amounts of additives present in foods and packaging materials.

Food industry analysts were also informed of latest techniques involving electrochemistry, mass spectrometry, gas chromatography and isotope dilution.

First choice in development of quantitative methods for food additives should be colorimetric techniques, according to F. Lamb, National Canners Assn., Washington Reasons are their: Simplicity, sensitivity, and need for relatively simple, inexpensive equipment.

Selection of a suitable instrument for a particular determination should be based on knowledge of apparatus' capabilities and requirements of method.

Successful knowledge of a procedure requires familiarity with chemical reactions and definite assurance that the clean-up procedure is adequate for removal of all possible interferences.

Here are conditions required for successful colorimetry: (1) A sensitive reaction, and (2) preparation of an unknown solution free, or relatively free, of interfering substances.

When these conditions can't be met, other more complex methods giving more precise results should be checked.

What Is Colorimetry?

In its simplest form, a colorimetric method employs the human eye as the measuring "instrument." Visual and photoelectric measurements are concerned here with that portion of the electromagnetic spectrum visible to the eye (about 400 to 700 millimicrons).

Method involves comparing colors of standards with the unknown solution. Standards are prepared by means of Nessler tubes, or by varying relative depths through which a light source must pass through a single standard and the unknown produced by a color match (Dubosque colorimeter).

In the early '30's, photoelectric methods were developed that are more precise than visual ones and don't require preparation of series standards every time unknowns are run.

Analytical methods for trace quantities of pesticides or food additives are considered satisfactory if ±5-10% of added material is recovered. Photoelectric methods, however, are sensitive to ±1%, or better.

Here's a breakdown on colorimetric instruments:

1. Single cell, direct reading: It's simple in design and useful for routine analysis. Light from a tungsten source passes first through a filter, then through the sample solution before it impinges on a photoelectric cell (barrier-layer type) hooked to a microammeter. Intensity of light source is varied by a rheostat (or other means), with amount of light transmission read on the galvanometer.

2. Double cell: Here, light from a single source is split into two beams, each activating a separate photocell. After beams are balanced, sample solution is inserted in one beam and blank in other. Difference in response is measured by potentiometer circuit's slide wire that permits

greater precision in measuring than the above-mentioned single cell unit.

3. Simple spectrophotometers: Instead of filters, these employ diffraction gratings to produce light of given wave band over entire visible spectrum. Band widths in different instruments vary from 20-35 mμ. These instruments are as simple to operate as the single and double cell units and, in general, employ the same type circuits.

In some cases, accessories permit a variety of measurements including reflectance, nephelometry and flame photometry. These instruments may also be used as spectrophotometers (to plot absorption curves). And they may be employed to extend the visible range to near UV and IR.

4. Spectrophotometers: With these, wave bands customarily employed may be varied from less than 1 to about 5 mμ. Instruments can be used for routine work but, as a rule, they're not as easy to operate as simple colorimeters. They can best be adapted for purposes requiring their more refined features.

Some spectrophotometers offer a compromise between simple units employing diffraction gratings and the best precision instruments from price and performance standpoints.

UV Methods for Residues

Only those compounds (converted ones, too) that absorb ultraviolet energy can be determined by UV spectrophotometry, according to R. Blinn, U. of Calif. Such compounds (occurring in minute amounts in foods) should also possess high molar absorptivity.

For feasible determination of additives it is essential to isolate them, in a practical way, from the mass of UV-absorbing materials in natural products. So the compound should possess some distinctive chemical or physical properties to permit clean-up of these interferents.

It's possible to devise an isolation procedure for almost any compound in heterogeneous mixture. But unless the procedure is convenient, another approach is indicated.

Clean-up requirements for successful UV spectrophotometry are more stringent than for any other procedure. This is due to a multitude of absorbing materials from product being analyzed, and from reagents and solvents. What's more, evidence of a compound's identity is not as conclusive by UV as by IR methods. However, where feasible, UV does provide sensitivity, selectivity and rapid determination of additives.

IR For Pesticides

As a rapid, non-destructive analytical tool, infra-red spectroscopy is being employed to an ever increasing extent in varied fields, and it offers great possibilities in organic phosphate pesticide analysis, reported D. F. McCaulley, FDA, Washington.

Using appropriate preliminary procedures, IR will analyze residues of parent organic phosphate pesticides (and possible metabolites) to: (1) Verify stability of formulations, (2) determine purity of compounds and their structural formula, (3) follow isomerizations or various chemical changes, and (4) determine composition of isomeric mixtures.

Despite the great potential of these techniques in organic phosphate analysis, nearly every use poses problems such as interpreting spectra. Where more than simple comparison is necessary, one must rely on somewhat scattered data relating to infrared absportion bands with structural units. Widely available charts, though useful, are too general to be applied with certainty to specific compounds.

Greatest difficulties are presence of comparatively minute amounts of residue in sample, and lack of sensitivity in most IR instruments. As a result, it's necessary to use relatively large samples and complex clean-up procedures.

Conventional methods for determining pesticide residues on leafy green vegetables are long and involved, reported D. M. Coulson, Stanford Research Institute, Menlo Park, Calif. What's more, an analyst must know if a particular pesticide is present before making an analysis. Hence, it's practically impossible to make certain if vegetables are safe for human consumption.

Based on GC separation techniques, research was conducted on rapid screening tests involved in residue analysis. Developed was the sought-for qualitative and quantitative method involving organic-solvent extracting vegetables, concentrating extract, separating from interferents, and detecting the pesticides (FE Apr. '60, p. 105).

Technique is suitable for determining microgram quantities of such pesticides as gamma-benzenehexachloride, Aldrin, Dieldrin, DDT, DD, Endrin, Systox, malathion, parathion, Chlordan and Ronnel.

Using GC for separation, and the electro-chemical technique – microcoulometry–for measurement, residues can be detected and measured at less than ppm. in under two hours. This was reported by L. A. Cavanaugh, Stanford Research Institute.

The catch-all extraction is fol-

UV SPECTROPHOTOMETER absorbs samples' spectra through UV, visible and near IR range. Double-beam instrument cancels solvent interference and ratios sample beam with reference beam.

NEW GAS CHROMATOGRAPH accepts large-volume samples, collects purified components without loss of sensitivity or accuracy. With unit, spectroscopists can now obtain practical quantities of "chromatograph-pure" samples for running reference spectra.

lowed by a rapid step, in which extract is concentrated to small volume, with or without clean-up procedures.

New instrument comprises three major modules: (1) GC column and micro-combustion chamber, (2) power supply for chromatograph, and (3) coulometer and titration cell.

Coulometric detector is employed with a Stanford-developed halide analyzer (to determine % chlorides) and a GC. Coulometer consists of a Brown amplifier and reversible motor driving a 10-turn, 2,000-ohm helipot (3-29v. across) and Varion 10-mv. recorder with current scales of 10^4, 10^3, 300 and 100 microamps., full scale. Reference electrode system has 270 mv. externally applied (in opposed direction), with amplifier servo system operating as null (zero) instrument from signal.

GC's introduction system handles 0.1 ml. solution. Column comprises aluminum tubing (¼ in. x 6 ft.), packed with Johns-Manville Chromosorb (30/60-mesh) coated with Dow-Corning high-vacuum silicone grease (25% by weight).

Coulometric titration cell is constructed of 30-mm. (OD) Pyrex, with plate glass bottom to facilitate use of a magnetic stirrer. Cell contains two pairs of electrodes. Indicating pair comprises silver micro-electrode and external calomel-saturated electrode with agar bridge dipping into solution. Generator pair are made up of an internal silver anode and external platimum cathode solution-connected through an agar bridge. Supporting electrolyte (for coulmetric titration) is 15 ml. of water (15%) in glacial acetic acid.

System is based on continuous titration of chloride and sulfide with silver ions electrically generated in titration cell. Gases eluted from separation column are mixed in furnace with oxygen, and burned to form CO_2, H_2O, HCl and other inorganics. These gases are bubbled through titration cell, under conditions specific for chlorides.

If combustion is followed by catalytic hydrogenation in high-temperature furnace, sulfur is converted into H_2S. Both chlorides and sulfides are then detected. Sulfur-containing constituents are determined by difference between samples thermally degraded oxidatively or reductively.

Flame Ionization Detector

By employing a flame detector in conjunction with GC (see FE July '59, p. 82), trace materials (organics) can now be detected in parts/billion, according to T. Johns, Beckman Instruments. Method's response time is less than a second. Moreover, detection system's extremely low internal volume prevents loss of resolution achieved in GC columns.

Using this technique, an analyst can run a 4-component sample through column and read results in 15 sec. Low concentrations (ppm.) of minor components in alcoholic beverages can be easily determined. Method can also be employed to handle microliter samples—like fatty acids.

Detector is based on formation in the flame of ions that vary flow of current between burner tip and collector electrode. An electronic circuit was hooked to a burner which unites, for combustion (hence ionization), carrier gas (hydrogen) and sample with air.

Low ion-current measuring electrometer (vibrating-reed type) converts high- to low-impedance signays, which are read out on a potentiometric recorder.

Isotope Dilution for Toxicity

These techniques, pointed out J. H. Rust, U. of Chicago, cover some of the most satisfactory methods for food toxicologists. They're far beyond the reach of ordinary biochemical methods.

Principle is based on determining degree of dilution of normally occurring substance and a similar one that's labeled. Amount of dilution is figured through newly established ratio of normal-to-labeled substance in mixture. Since method's success depends on qualitative (rather than quantitative) recovery, use of many additional chemical methods are possible.

Basically, stated R. L. Bogner, Nuclear Science & Engineering Co., Pittsburgh, there are four isotope dilution techniques. All can be supplemented with instrumental procedures involving GC, UV or IR spectroscopy. And they all require radiation detection facilities.

The methods involve:

1. Direct dilution: Labeled (isotope) compound is added to unlabeled sample, then followed by separation, purification and radiochemical assay. Method is sensitive to mg. quantities.

2. Reverse dilution: Unlabeled compound is added to labeled sample. Analyst then goes through similar separation, purification and radiochemical assay steps. Method detects μg amounts.

3. Derivative dilution: Involved is addition of labeled reagent to unlabeled mixture, then separating, purifying and assaying. Method's sensitive to sub-μg. amounts.

4. Double derivative dilution: Added are two different isotopes at different steps, then determining

amount of each in sample. Method's best of the four since it can detect amounts below ppb.

Checking for Silicones

Since introduction of silicones to the food industry, numerous problems have arisen that involve their analysis in trace amount, stated H. J. Horner, Dow Corning Corp. During the past few years, however, the unusual, difficult problems associated with silicone analysis, have been solved.

Because of their inertness, silicones can't be color-tested. Nor do they offer distinctive reactions. Hence, it was necessary to develop special extraction and concentration techniques to obtain samples suitable for analysis.

First devised was a chemical method that could be applied, provided residual silica doesn't interfere. Then, a more definitive IR technique was developed. It involves preliminary extraction and concentration, followed by IR examination of the extract. Lower limit of detection is about 0.1 μg. of SiO_2 per ml. of solution.

Detecting Package Additives

R. Shapiro, American Can Co., Chicago, discussed use of instrumental techniques to: (1) Detect small amounts of substances in foods, (2) determine if such substances are additives, and (3) find out their exact amounts in foods.

Commenting on some of Canco's analytical developments—specifically for additives in packaging materials—Shapiro pointed out that a new polarographic method was devised for measuring trace amounts of tin (tin foil coated with enamel under test and with foil immersed in test solution). As with other methods employed in extraction studies, emphasis is on weight measurements. Hence, the development of an accurate polarographic method for Canco's can coating-test program.

Spectrophotographic techniques have been employed to analyze for possible food-extractable aluminum and zinc incorporated in coatings. Aluminon method is employed for aluminum, and dithizone for zinc.

An ingredient of interest in beer-can coating was an orange dye whose chemical composition was unknown. Since knowledge of dye's composition wasn't necessary to determine its degree of extractability in beer, a spectrophotometric curve was obtained of dye in an alcoholic solution. Detected this way were concentrations as low as 0.1 ppm.

Canco, he said, prefers using recording-type spectrophotometers for tracing spectral curves to provide information as to wavelength to read. Once optimum wavelength for maximum sensitivity is known, then analysts switch to non-recording instruments for quantitative phase of work.

Sealing Compounds, Too

Test work is also conducted on end-sealing compounds that cover very small exposure (to foods) areas. An example is a compound containing a small amount of magnesium oxide formulated for beer and carbonated beverage cans. Compound was coated on glass slides and immersed in 1% citric-citrate and 10% sucrose solution (pH 3.5) to determine suitability for carbonated beverages.

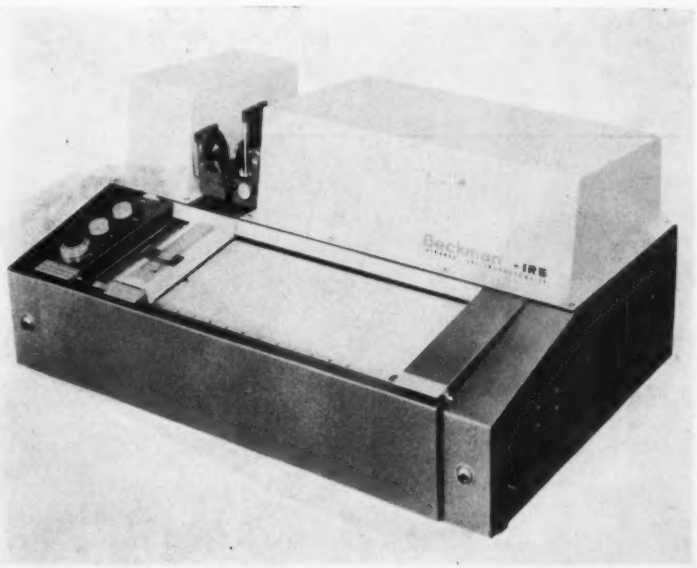
The compound tended to lift off slide after immersion. A metal backing couldn't be used, because most metals (including specially fabricated tinplate double seam) corrode in citric acid solution. Platinum foil (0.001-in.) proved an ideal backing material. And, it was found, that sucrose-citrate solution extracted trace amounts of compound from platinum.

Instrumental techniques were applied to identify the extractables. Employed was emission spectrophotography (d.c. arc excitation) to analyze the ashed and graphite-diluted solution. Sample, it was learned, contained magnesium.

Work was also reported on application of GC to special compounds developed for use in containers with EBK (ethyl butyl ketone) as application solvent. Compounds were fed to rats to determine toxicity. But this brought up a question, if toxicity effects were observed, would they be indicative of toxicity of compound or presence of small amounts of trapped EBK solvent?

So analysts tested for residual solvent by dissolving compound in a high-boiling ketone (isophorene) and distilling the lower boiling EBK quantitatively in vacuo. Distillate was then injected into the GC. Reason for using distillate was to eliminate possibility of "gunking up" chromatograph's partitioning agent. However, method could be simplified without preparing the distillate. Instead, compound solution could be directly injected into chromatograph to detect residual EBK in compound at sensitivities above 0.1 μg.

Sometimes analysts search for substances (apt to be picked up by



IR SPECTROPHOMETER operates in the 2-16 mμ range. It's sensitivity has been increased 2,500 times through new micro-sampling accessories. Built-in attachment also expands IR record peak readings.

Tests Prove GC-Coulometry's Effectiveness

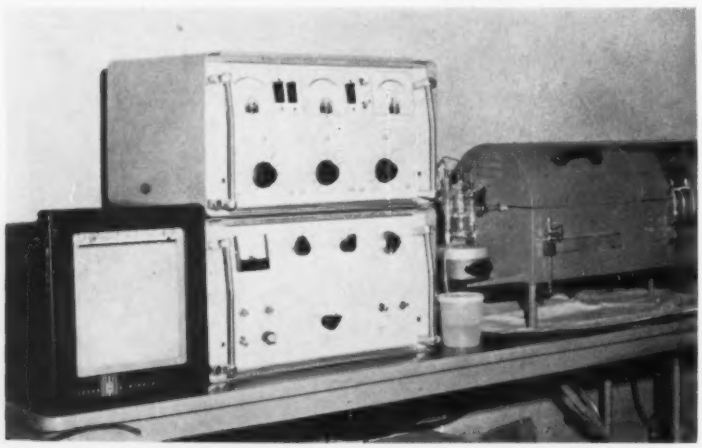
TABLE II—RECOVERY OF PESTICIDES is Practically Complete When Solutions in Solvents Are Introduced Into GC Column.

Pesticide	Quantity (μg.) Introduced	Quantity (μg.) Recovered	Recovery (Percent)	Column Temp. (Deg. C)
Lindane	5.0	5.2	104	250
Lindane	4.0	3.8	95	250
Lindane	4.0	4.2	105	250
Lindane	2.0	1.9	95	250
Lindane	1.0	1.1	110	250
Aldrin	4.0	4.2	105	250
Aldrin	3.0	2.8	93	250
Dieldrin	8.0	7.4	93	250
Dieldrin	4.0	4.1	102	250
Dieldrin	4.0	4.1	102	250
DDT	20.0	19.4	97	250
DDT	15.0	14.5	97	250
DDT	8.0	7.5	94	250
DDT	5.0	4.6	92	250
Endrin	10.0	9.9	99	250

TABLE III—EXTRACTS From Treated Vegetables Also Gave Good Recoveries.

Pesticide	Quantity (μg.) Added	Quantity (μg.) Recovered	Quantity (Ppm.) Added	Quantity (Ppm.) Recovered
Aldrin*	4.1	4.1	10	10
Aldrin*	2.4	2.3	5	4.8
Lindane**	5.8	5.0	20	17.0
Lindane**	3.8	4.4	10	11.5
Lindane**	1.3	1.3	1	1.0
DDT*	17.0	17.3	10	10.0
DDT*	25.9	24.9	5	4.8
DDT*	5.5	3.3	1	0.6

* On lettuce and broccoli.
** On lettuce.



MICROCOULOMETRIC METHOD employs gas chromatography as tool for rapid screening of pesticide residues and coulometer to follow elution from chromatograph's separation column. System's based on continuous titration of chloride and sulfide with electrically generated silver ions.

foods) that aren't a part of containers but of packaging equipment. An example is cleanability of materials—like plastics used for molded parts on filling machines in contact with dairy products.

Radioactive tracer techniques were employed to evaluate cleanability. Dairy products were contaminated with phosphorous-32-labeled *E. coli* suspension, then used to soil disks of material to be evaluated. After disks were dried, radioactivity of each was determined by an end-window "Sugarman"-type proportional counter (to get initial counts). Disks were next cleaned with water and various interferents, then tap-water rinsed. Counts were corrected for background and decay (of isotope). Test materials, it was found, were readily cleaned, so should meet public health standards.

New Dye for Rosin

Another problem, the possible extraction of rosin from adhesives and fiberboard by milk and fruit juices. Most methods for rosin determinations aren't sufficiently sensitive. Promising is a method based on formation of colored complex between rosin and an azo dye developed for this purpose.

The special dye forms a yellow complex in chloroform, and is read at 430 mμ wavelength. It was further learned that sensitivity could be enhanced by acidifying (HCl) the chloroform extract, when complex shifts into aqueous-acid phase and color changes to red with 505-mμ absorption peak.

But, interferents such as saturated and unsaturated esters, alcohols, ketones, fatty acids, etc., gave trouble. These were easily eliminated by converting into urea complexes.

With this technique, it's possible to detect 1 ppm. (or less) rosin in orange juice. Rosin detection, however, becomes more difficult in milk products containing high amounts of fat. Greatest difficulty is with whipping cream (33% butterfat).

Problem of identifying materials extracted by fats and oils is extremely difficult when extractables are neither acid, alkaline nor volatile. UV techniques are applicable directly to oil solutions, but aren't useful if extractables are aromatic, heterocyclic or conjugated double-bonded. And IR methods aren't readily adaptable to oil solution because of solvent's intense background absorption.

—*End*

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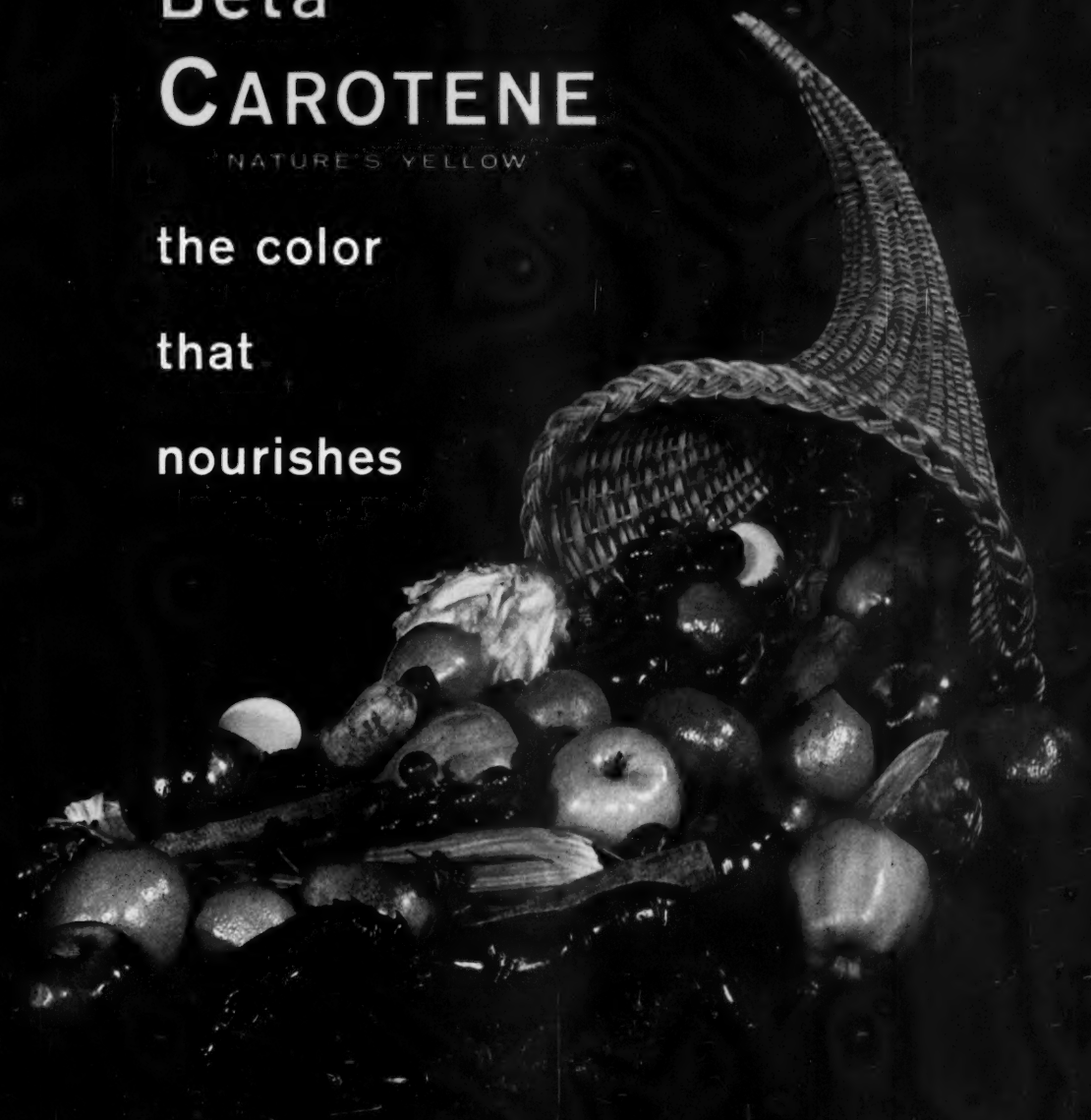
KEEP FAITH WITH NATURE — GUARD HER GOODNESS

Beta CAROTENE

NATURE'S YELLOW

the color
that
nourishes



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NEWEST DATA / ROCHE® Beta CAROTENE

The SAFE yellow-to-orange COLOR that NOURISHES

Roche has all the types of beta carotene you'll need, no matter what you're processing. Roche packings are made with your needs in mind. Summarized below is information you'll find helpful—

TECHNICAL INFORMATION —Beta CAROTENE Roche crystals

Crystalline Beta CAROTENE Roche is in the all-trans form. It is not a mixture of isomers of varying coloring value. Roche Beta CAROTENE is 100% provitamin A, the preferred carotene for use in foods.

Empirical Formula:	$C_{40}H_{56}$
Molecular Weight:	536.85
Melting Point:	183.0

Appearance: Red-violet platelets

Solubility in Edible Oils:

At room temperatures about 0.08%
At 450° C 0.2%
At 140° C . . . . . 6.0% *

Biological Properties:

0.6 microgram of beta carotene = 1.0 U.S.P. unit of vitamin A
1.0 gram of beta carotene = 1,666,667 U.S.P. units of vitamin A

*Carotene will recrystallize on cooling. One percent solutions will remain dissolved for approximately 8 hours at room temperature. Some isomerization and destruction take place at this temperature.

MARKET FORMS & PACKINGS— Beta CAROTENE Roche

Crystalline Beta CAROTENE—1,666,667 U.S.P. units of vitamin A activity per gram.

Packed: in polyethylene bag in hermetically sealed sanitary can containing 100 grams.

30% Beta CAROTENE in vegetable oil—500,000 U.S.P. units of vitamin A activity per gram. In vegetable oil. Each gram contains 0.30 gram of beta carotene.

Packed as follows: 1 pound (0.4536 kilo) and 3 pounds (1.361 kilo) in Tripletite Tamperpruf metal can. 33 pounds (14.97 kilo) in steel pail, Synthetasine-lined, Leverlok Tamperpruf cover.

24% Beta CAROTENE, Semi-Solid Suspension—400,000 U.S.P. units of vitamin A activity per gram. In vegetable oil. Each gram contains 0.24 grams of beta carotene.

Packed: available in 1 pound (0.4536 kilo) and 3 pounds (1.361 kilo) Tripletite Tamperpruf metal containers.

Beta CAROTENE and Vitamin A Blends—Roche Beta CAROTENE and Roche Vitamin A (acetate or palmitate) are blended in vegetable oil according to your specifications. A range of potencies is available, including high-potency blend with no oil dilution. *Packed:* in sealed, sanitary, batch-size cans.

Beta CAROTENE Blends—Dilutions of Beta CAROTENE Roche are made in vegetable oil. Minimum dilution, 6%, which is equivalent to 100,000 U.S.P. units of vitamin A activity or 0.06 gram of beta carotene per gram of blend.

Packed: in batch-size, sanitary, sealed cans.

Dry Beta CAROTENE Beadlets, Type 2.4-S—Water-dispersible, free-flowing beadlets. Each gram contains approximately 40,000 U.S.P. units of vitamin A as beta carotene.

Packed: in polyethylene bags in fibre drums up to 50 kilos. Also in polyethylene bags in one- and two-kilo Tamperpruf metal containers.

USE IN FOODS

Safe-Sure-Yellow-Pure. Roche Beta CAROTENE gives SAFE yellow-to-orange color and nutritional value to such foods as:

Margarine—Salad & Cooking Oils—Mellorine & Ice Cream Products—Pie Crust & Cake Mixes—Shortening—Baked Goods—Fruit Drinks, Fruit Juices & Concentrates—Puddings & Egg Yolk Products—Frozen Foods—Gelatin Desserts—Confections—Dessert Toppings—Popcorn—Cheese—Soups—Creamed Foods.

Safety Proven. Beta carotene, one of nature's own colors in foods, has been consumed for thousands of years. Despite this evident record of safety, Roche did not market its beta carotene until it had been tested over a long period of time for acute and chronic toxicity. These tests proved beyond doubt that Roche Beta CAROTENE is *safe*.

Nutritive Value. Roche Beta CAROTENE is a provitamin A. It is converted within the human body to vitamin A.

Stability. Excellent stability has been demonstrated by extensive laboratory tests and years of widespread commercial use.

True Color. Roche Beta CAROTENE gives foods true, natural-looking color without any tinge of green. No change to a reddish color happens during storage, as may occur with some vegetable pigments.

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FDA's Latest Additives Listings

Packaging Agents in GRAS Class . . . More Time Extensions

THAT WHOPPING PILE of untagged additives is no longer so whopping.

In short, there's some headway against the clog as more and more substances are separated into working categories by FDA's persistent screening.

Here are the latest tabulations.

For earlier listings, readers are referred to FE Jan., p. 81; Feb., p. 19; Mar., p 89; Apr., p. 99; and May, p. 77.

41 Cotton-Wrap Agents In GRAS, 46 Get Time

Newly classified by FDA as substances "generally recognized as safe" (GRAS) are these 41 "migrating" agents that may be found in the cotton and cotton fabrics employed in dry food packaging:

Acacia (gum arabic); Acetic acid; Beef tallow; Calcium chloride; Carboxymethylcellulose; Coconut oil, refined; Corn dextrin; Cornstarch; Fish oil (hydrogenated); Gelatin; Guar gum; Hydrogen peroxide; Japan wax; Lard; Lard oil; Lecithin (vegetable); Locust bean gum (carob bean gum); Oleic acid; Peanut oil; Potato starch.

Sodium acetate; Sodium bicarbonate; Sodium carbonate; Sodium chloride; Sodium hydroxide; Sodium sulfate; Sodium silicate; Sodium tripolyphosphate; Sorbose; Soybean oil (hydrogenated); Stearic acid; Talc, Tall oil; Tallow (hydrogenated); Tallow flakes; Tapioca starch; Tartaric acid; Tetra sodium pyrophosphate; Urea, Wheat starch; Zinc chloride.

Meantime, these 46 cotton-wrap indirect additives have been granted the usual time extensions:

Abietic acid; Amyl acetate; Borax; Boric acid; Butyl oleate; Candelilla wax; Cresylic acid; Diethylene glycol esters of stearic acid, lauric acid, tallow, coconut oil; Diethylene glycol ethyl ether; Diethylene glycol monolaurate, Ethyl esters of copolymers of polyacrylic acid and polymethylacrylic acid;

Ethylenediamine tetraacetate; Ethylenediamine tetraacetic acid, sodium salt; Ethylene glycol *N*-butyl ether; Ethylene glycol ethyl ether; 2-Ethylhexanol; Ethylene glycol *N*-hexyl ether; Formaldehyde; Glycerol esters of stearic acid, lauric acid, tallow, coconut oil; Hexane-1, 2-diol; Isopropanol; Methylesters of copolymers of polyacrylic acid and polymethylacrylic acid;

Petroleum sulfonate (mahogany soap containing 50% mineral oil and 50% sulfonated petroleum oil); Ortho-phenylphenol; Pine oil; Polyethylene; Polyethoxylated alkyl. phenols (polyoxyethylated alkyl phenols, prepared by ethylene oxide reaction on monyl phenol containing up to 40 of the oxyethylene groups);

Polyethoxylated fatty acids (polyoxyethylated fatty acids, prepared by reacting ethylene oxide or polymers of ethylene oxides with oleic or coconut oil fatty acids, or tallow or coconut oil); Polyethoxylated fatty alcohols (polyoxyethylated fatty alcohols, obtained by re-

Grant Grace Periods to 14 'Directs', 18 'Indirects'

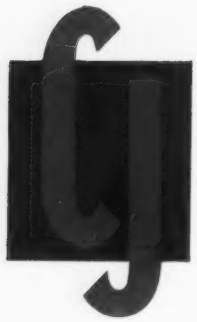
Time extensions (1 yr. from Mar. 6, or until earlier decision on final tolerances or denials) have been given by FDA to an additional 32 food additives.

Of these, 14 are in the direct-additives class, and are as follows—

Direct Additives	Limits	Specified Uses or Restrictions
Carbon monoxide	Available data indicates no residue in foods ready to eat.	As an incidental constituent of inert or flue gas produced by the combustion of natural gas and used to displace or remove oxygen in the processing and packaging of nonstandardized foods.
Charcoal, nonactive, produced by retort method to conform with requirements of U.S.P.X.	.....	In foods, according to good manufacturing processes.
Ethylene dichloride	0.01%	Residue in production of spice oleoresins.
Ethylene oxide	.....	In dried fruit as a residue from use as a fumigant, applied at rate of 0.4 milliliter per pound of dried fruit.
Do.	50 ppm	In ground spices as a residue from use as a fumigant.
Glycery' abietate (ester gum)	100 ppm	In citrus-flavored beverages
Lecithin (hydroxylated)	.....	Not to exceed 0.5% as an emulsifier in foods, excluding standardized foods.
Metaldehyde	Zero residue on strawberries at time of harvest.	1 lb. per acre as a spray or dust on strawberries, applied not less than 14 days before harvest, for control of slugs and snails.
Methylethylcellulose	3.0%	In vegetable-fat whipped topping.
Monoglyceride citrate	200 ppm	As an antioxidant in fats.
Mono- and diglycerides prepared from oleic acid in accordance with extension granted in this order.	.....	As an emulsifier in foods.
Oleic acid prepared from edible fats and oils, free from chickedema factor.	.....	In foods and in the manufacture of food components.
Polysorbate 80 (polyoxyethylene "20" sorbitan monooleate).	.....	As an emulsifier or solubilizer in vitamin preparations providing for not more than 280 milligrams daily for children and not more than 500 milligrams daily for adults.
Do.	0.26 ppm	In fluid milk, from its use as a dispersing agent for vitamin D concentrate.
Polyvinylpyrrolidone	170 ppm	In vinegar as a residue from precipitating undesirable constituents (tannins).
Do.	400 ppm	In wine as a residue from precipitating undesirable constituents (tannins).
Stearic acid, prepared from edible fats and oils, and free from chickedema factor.	.....	In foods and in the manufacture of food components.

The other 18 agents granted grace periods are indirect additives used in connection with packaging materials, coatings, and containers. They are as follows—

Indirect Additives	Limits	Specified Uses or Restrictions
Castor oil phthalate	.....	Not to exceed 0.26% in cellophane film for food packaging.
Chromium oxide green	.....	As a colorant in food containers.
Dicyclohexylphthalate	.....	Not to exceed 2.84% in cellophane film for food packaging.
Isobutene and isoprene or butadiene	.....	Not to exceed 8.0% in wax coating for food packaging.
Oleic acid, potassium soap	.....	As defoaming agent in paper and paperboard used for food packaging.
Oleic acid, sodium soap	.....	Do.
Paraffin, synthetic (Fischer-Tropsch)	.....	Not to exceed 15% in coatings for food wraps.
Phthalimidoethyl propionate	.....	Not to exceed 0.71% in cellophane film for food packaging.
Polyamide resin (dimerized vegetable fatty acid and diethylenetriamine).	.....	As a component in food wraps.
Polybutene	.....	Not to exceed 8.0% in wax coating for food packaging.
Polyglycol 200	.....	Not to exceed 0.60% in cellophane film for food packaging.
Polyglyco ether of octylphenol containing 5 mols of ethylene oxide.	.....	As a defoaming agent in paper and paperboard used in food packaging.
Polyglyco ether of octylphenol containing 10 mols of ethylene oxide.	.....	Do.
Polyoxyethylene "20" sorbitan monostearate.	.....	Not to exceed 0.06% in cellophane film for food packaging.
Sorbitan monostearate	.....	Do.
Tetrahydrofuran	.....	As a solvent in preparation of cellophane for food packaging.
Triphenyl phosphite, alkylated	.....	As a food packaging component.
Ultramarine blue	.....	As a colorant in food containers and liners thereof.



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action of ethylene oxide with stearyl alcohol, oleyl alcohol, or cetyl alcohol); Polyvinyl alcohol; Propylene glycol esters of stearic acid, lauric acid, tallow, coconut oil; Propyl oleate; Soaps of tallow, stearic acid, oleic acid, tall oil fatty acids, and rosin; Sodium dodecylbenzenesulfonate; Sodium pentachlorophenate; Stoddard solvent; Sulfated castor oil, 75%; Sulfated cetyl alcohol; Sulfated corn oil;

Sulfated tallow; Sulfated vegetable oil; Sulfonated propyl, butyl, or isobutyl oleates, or mixtures of these; Triethanolamine salt of dodecylbenzenesulfonate; Urea-formaldehyde resins (prepared by reaction of varying amounts of urea with formaldehyde); Wax, microcrystalline, and paraffin*; White mineral oil.

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* *Type I: A congealing point of 160°F. maximum (ASTM D-938), an absorptivity at 290 mμ of 0.04 liter per gram centimeter maximum (ASTM E-131), an oil content of 1.5% maximum (ASTM D-721), and a Saybolt color of 20 minimum (ASTM D-156). Type II: Absorptivity at 290 mμ of 1.0 maximum, an oil content of 5.0% maximum, and a color of 3.0 maximum (ASTM D-1500).*

82 Spices, Flavorings Added to GRAS List

Boosting the file of spices, seasonings, essential oils, and natural extractives generally recognized as safe is a new four-category listing by FDA that encompasses another 82 substances.

This brings the total to better than 230 (see FE Feb., p. 19-21, for initial listing). Here are the additions:

(1) Spices and Other Natural Seasonings and Flavorings (Leaves, Roots, Barks, Berries, etc.):

Alfalfa herb and seed; Ambrette seed; Angelica; Angelica root; Angelica seed; Angostura (cusparia bark); Balm (lemon balm); Chamomile (cammomile, English or Roman); Chamomile (cammomile, German or Hungarian); Chervil; Clover; Elder flowers; Galanga (galangal); Geranium; Hoarhound; Hyssop; Linden flowers; Sage, Greek; Thyme, wild or creeping.

(2) Essential Oils, Oleoresins (Solvent-Free), and Natural Extractives (Including Distillates)

Alfalfa; Ambrette seed; Balm (lemon balm); Bergamot (bergamot orange); Cacao; Carrot; Chervil; Chicory; Clover, Corn silk; Curacao orange peel (orange, bitter, peel); Dandelion; Dandelion root; Dog grass (quackgrass, triticum); Elder flowers; Estragon (tarragon); Galanga (galangal); Geranium; Glycyrrhizin, ammoniated;

Hickory bark; Horsemint; Hyssop; Immortelle; Laurel berries; Lemon balm (see balm); Lemon peel; Linden flowers; Lupulin; Malt (extract); Melissa (see balm); Menthol; Menthyl acetate; Molasses (extract); Orange, sweet flowers; Orange, sweet, peel; Rose buds; Rose flowers; Rose fruit (hips); Rose leaves; Sage, Greek; Savory, summer; Savory, winter;

Sloe berries (blackthorn berries); Tamarind; Tannic acid; Thyme, wild or creeping; Triticum (see dog grass); Violet flowers; Violet leaves; Ambergris; Castoreum.

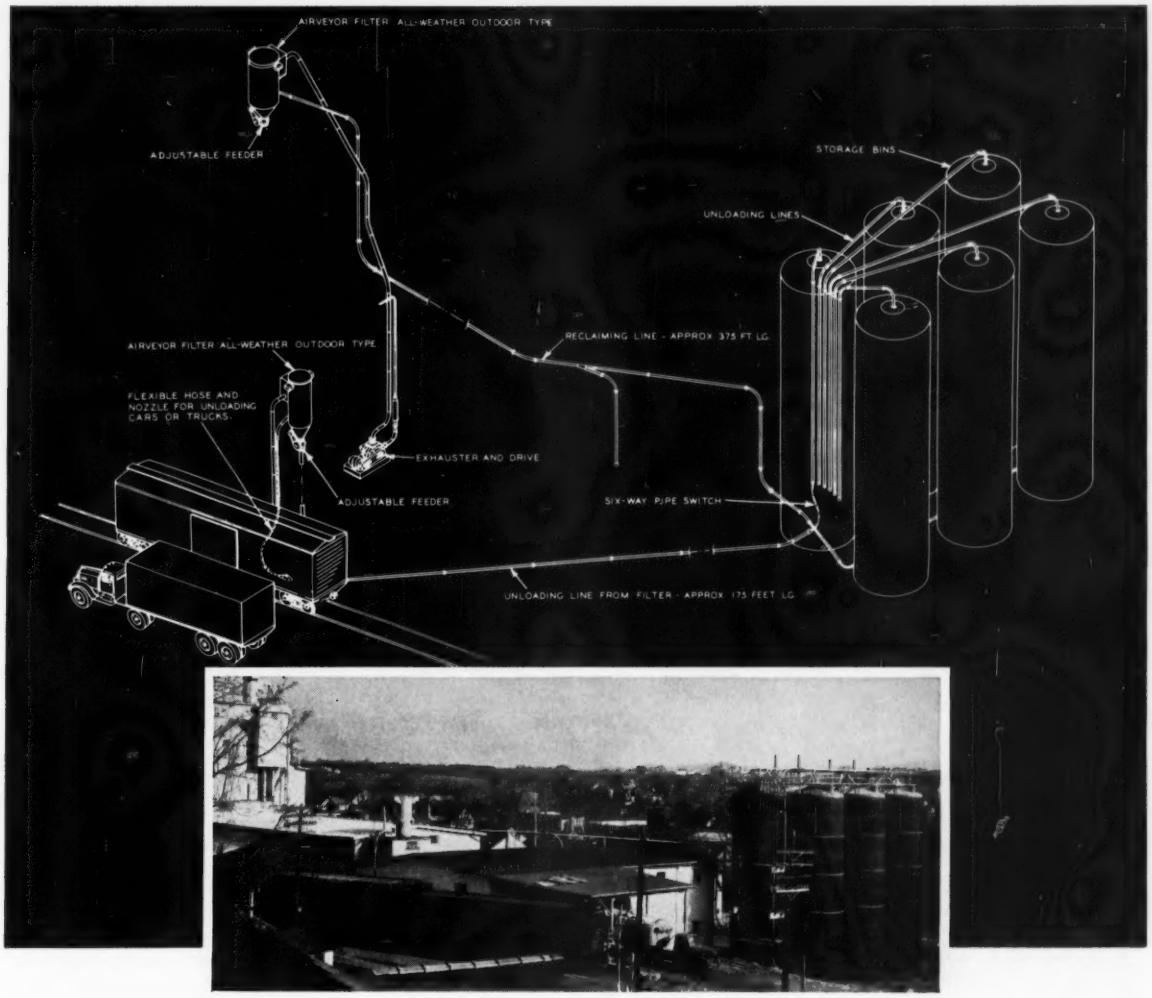
(3) Natural Substances Used In Conjunction With Spices and Other Natural Seasonings and Flavorings:

Algae, brown (kelp); Algae, red; Dulse.

(4) Natural Extractives (Solvent-Free) Used In Conjunction With Spices, Seasonings, and Flavorings

Algae, brown; Algae, red; Apricot kernel (persic oil); Dulse; Kelp (see algae, brown); Peach kernel (persic oil); Peanut stearine; Persic oil (see apricot kernel and peach kernel); Quince seed.

—End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The arithmetic of materials handling

One man + one mill + Fuller pneumatic conveying = work of four mills

How did F. M. Brown's Sons, Inc., double production at one of their Pennsylvania mills without plant expansion? They needed increased storage area to meet new capacity requirements. What was the solution? Two Fuller Airveyor® pneumatic conveying systems were installed in their Birdsboro mill. One for rail car and truck unloading and the second system for reclaiming from storage to process.

Results—with this new equipment, one mill produces enough feed to allow Brown to use the other three mills for storage and distribution. Production is still increasing and handling costs have been cut up to $3.00 a ton.

In addition to increasing storage space, and reducing unloading time and costs, these systems are self-cleaning, thus minimizing contamination.

If you are now handling dry, bulk, granular materials, it will pay you to look into Fuller pneumatic conveying systems. Fuller systems are engineered specifically for your particular application. They bend around corners, run up or down, through walls and floors, almost any distance—even underground. Write or phone today outlining your problem. Fuller will gladly furnish additional information with appropriate recommendations.

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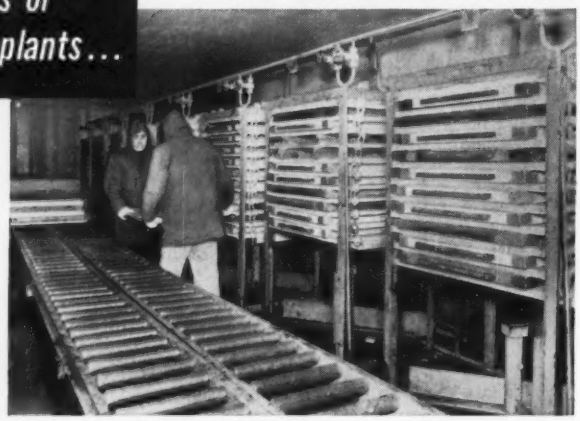

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Detecting Foreign Fats In Cocoa Products

Determination of foreign fats in chocolate can be a very complex matter, but by making these 5 tests on the extracted fat, extent of its sophistication can be estimated:

1. Infra-red absorption of non-fractionated fat (this will detect small quantities of hydrogenated fats).
2. Separation of fatty acids of non-fractionated fat, using column chromatography (this will estimate lauric acid content, hence detect coconut fat).
3. Separation of methyl esters of fatty acids of non-fractionated fat by gas chromatography (will detect small amounts of coconut oil, and apparently the vegetable tallows as well).
4. Determination of constants of acetone soluble glycerides by physical and chemical analysis (will detect coconut fat and hydrogenated fats).
5. Chromatography of fatty acids prepared by fractionation from acetone and separated by column chromatography (will detect "E.K.E.", a cocoa butter substitute prepared by fractionating palm oil, in cocoa butter). — *International Choc. Rev.* 15(2), 81-7, 1960.

Antioxidants In Shortening Extend Life of Frozen Pastry

Addition of BHA or BHT to lard used in pastry doughs greatly extends fat stability of the baked frozen pastries.

This was demonstrated by tests in which: (1) Prime steam lard, and (2) similar lards containing singly and in combinations, BHA, BHT, propyl gallate and citric acid were used in frozen pastries held 36 weeks.

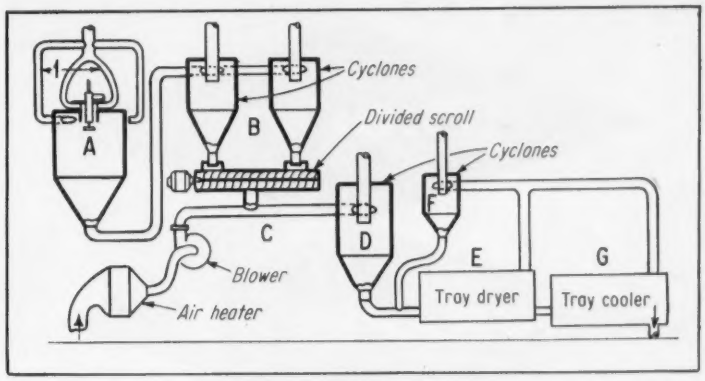
Addition of 0.003% citric acid or propyl gallate did not extend Schaal oven life of the pastry. But 0.01% BHA or BHT markedly extended fat stability, and a mixture of the 2 was even more effective.—*Food Research* (25), 120-26, 1960.

Poultry Bacteria Building Up Resistance to Antibiotics

Use of chlortetracycline (CTC) in poultry processing has led to increased resistance to the antibiotic by some bacteria. And resistance to other antibiotics *in vitro* is known to increase stepwise with the number of transfers.

This appears to be the case with 20 cultures of *Pseudomonas*, 4 *Alcaligenes* or *Achromobacter*, and 1 *Aeromonas* isolated from spoiled refrigerated poultry.

Resistance to CTC before training ranged from less than 0.25 to 15 ppm. After training, levels ranged from 0.5-480 ppm. Two cultures out of 10 originally resistant to 1 ppm., became resistant to 480 ppm. The other 8 acquired resistance to 120 ppm. No change in six characteristics of the bacteria could be detected. —*Applied Microbiology* 8(1), 27-30.



Lactose Clumped Without Rewetting In New 'Instant' Milk Process

An improved method for production of instant dry milk (both skim and whole), which employs several drying steps to produce desired agglomerating without rewetting is the object of a recent patent.

Process starts with introduction into top of spray dryer (A in drawing above) of a milk concentrate that has been seeded with lactose crystals. At the same time, air at 240-300F. is fed into dryer through pipes (1) adjacent to product atomizer at top of unit.

Operation in dryer is controlled to reduce moisture content of powder below 18%. From here product is moved to cyclones (B) and drops into divided scroll which discharges to passage (C). At this point powder should contain 12-13% moisture.

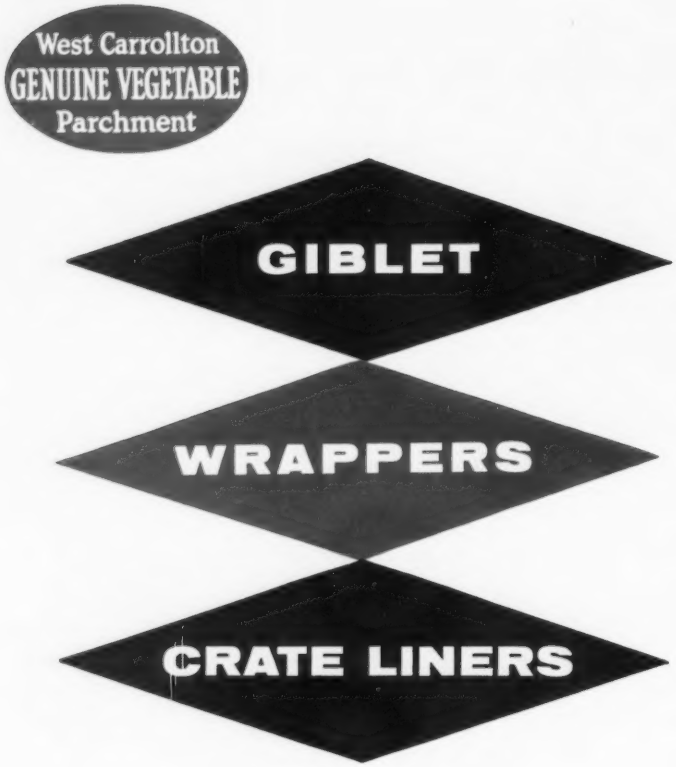
Air, heated to 185-200F., is blown into (C) and carries the powder to cyclone (D), where it discharges tangentially and falls to the bottom. This step reduces moisture to 8-9%. Powder then goes to tray dryer (E), which is supplied with air at 240F. Exhaust air from (E) moves to cyclone (E).

When moisture content of powder in tray dryer falls to 2-3% for whole milk, 3-4% for skim, it is moved to tray cooler (G), air cooled, and discharged to storage. Air from cooler goes to cyclone (F). Here, particles of powder from dryer and cooler are separated from the air and returned to tray dryer. An alternate method is to return the particles to spray dryer (A) where they mix with powder being formed from concentrate.–U. S. Patent 2,921,877, Jan. 19, 1960.

Flavors Isolated From Meats Seen Aiding Space Feeding

Aroma-bearing materials in meats may eventually be used to enhance flavor of certain meat cuts, or to impart flavor to food concentrates such as algae for space travel.

Basic research by EURDD scientists showed the flavor-producing substances of lean beef or pork could be completely removed by extraction with cold water. They found that the "meaty" flavor comes from the same compounds (low-molecular-weight polypeptides, carbohydrates, and amino acids) developed by



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BUTTER BOX LINERS	GIBLET WRAPPERS	MEAT WRAPPERS	TAMALE WRAPPERS
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BUTTER WRAPPERS	LARD CARTON LINERS	PARCHMENTIZED KRAFT	VEGETABLE SHORTENING CARTON LINERS
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Advances in Technology

cooking lean portions of both meats.

Compounds that provide distinctive flavors of pork and beef are found in the fatty portions. When heated to the boiling point of water, the compounds from beef fat smelled like apple or deep-fat-fried, and those from pork fat smelled like cheese or fried-bacon.—*Paper by I. Hornstein and P. F. Crowe, presented at ACS Meeting, Cleveland, April 8, 1960.*

Tocopherol In Poultry Diet Improves Flavor of Meat

Vitamin E in the diet of poultry is known to improve quality of meat by increasing stability of depot fats in the carcasses.

This has been confirmed by organoleptic tests on New Hampshire chickens grown in electrically-heated battery brooders from hatching to 10 weeks old at time of slaughter.

Chickens were fed either an all-vegetable ratio, or one containing 6-15% herring meal. When 36.7 mg. d-α-tocopherol acetate per lb. of ration was fed from hatching to slaughter, a significant improvement in flavor was demonstrated by triangular taste tests on grilled chickens.

When vitamin E was fed for a week only, either just after hatching or just before slaughter, there was also a tendency for judges to prefer the meat from these birds. Feeding the vitamin throughout life of chicken slightly improved efficiency of feed conversion. Reason for the improvement is obscure since it cannot be entirely explained by inhibition of rancidification of the fats.—*J. Sc. Food & Agr.* 11(3), 128-33, 1960.

Ferrous Sulfate in Rust Cuts Paint Durability

Since rust is essentially hydrated iron oxide, and therefore does not differ much from some paint pigments, it should be possible to develop formulas that would incorporate the rust into the film to make a stable and satisfactory coating.

In areas, where a great deal of coal is burned, rust of steel structures and equipment will contain ferrous sulfate. In Cambridge (England) total quantity found was maximum in Jan.-Feb. (3.7 mg./sq.in.). In July it was about 1.0 mg.

Since durability of paint applied

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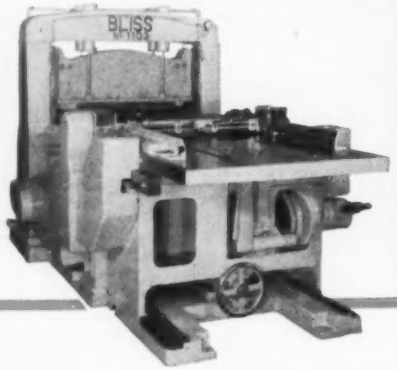
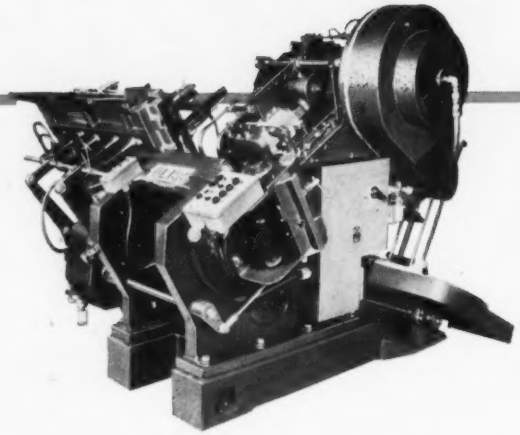
New #1103 Automatic Scroll Shear offers highest production rate ever, shears both lithographed or plain sheets up to 36" square. There's no idle stroke...every stroke is a cutting stroke. First table retracts to permit regrinding of cutters with a conventional cutter grinder without taking them off.

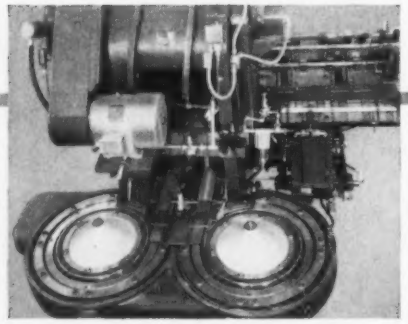




High speed #1831 Strip Feed Press blanks and forms can ends up to 404 diameter in double dies. Speeds range from 250 to 325 s.p.m. producing up to 600 or more ends a minute.

You can end CAN END production problems with these Bliss machines

(More Bliss end lines are in use than any other make)



Double end #20 Automatic Curler curls ends from 2" to 4¼" diameter; is designed for use with #1831 Strip Feed Press. Independently motor-driven, it does not rely on the press for its drive.

These machines incorporate many refinements in designs that have been thoroughly proved in production over the last four years. Write today for detailed information.

BLISS SINCE 1837 ®

E. W. BLISS COMPANY · Canton, Ohio

BLISS is more than a name—it's a guarantee

PRESSES • ROLLING MILLS • ROLLS • DIE SETS • CONTAINER MACHINERY • CONTRACT MFG.

in the summer is much greater than that applied in the winter, it is concluded that the presence of ferrous sulfate is responsible. In Cambridge paint protected rusty steel when ferrous sulfate did not exceed 0.6 mg./sq. in. But removal of the excess may require a long water wash or vigorous mechanical action.—*J. Applied Chem.*, 9(12), 673-80, 1959.

Pre-Irradiating Plus Heating Cuts Sterilizing Doses

Heat and radiation used together may be more effective for food preservation than either one alone.

This is suggested by experiments conducted at U. of Mich. with ground beef in No. 1 picnic cans. Packs were inoculated with *C. botulinum* and PA 3697 spores, then cans were sealed, cooled in ice water, irradiated with Co^{60}, heated, and incubated at 85F.

Treatments with 1.3-1.5 megareps of gamma radiation reduced F_0 values needed for sterilization by at least 4-fold. This combination also destroyed enzymes, certain micrococci or botulinus toxin that are not completely inactivated by a radiation dose of 4.5 megarads.—*Nucleonics*, 108-13, April, 1960.

Frozens Foster Bacteria

Substances present in foods can offer protection to bacteria during freezing and, therefore, increase the probability of their survival.

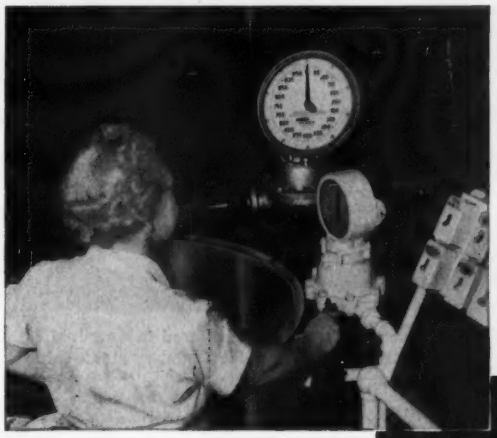
This was indicated by tests in which 3 species of bacteria generally recognized as causes of food-borne illness, *Salmonella typhimurium*, *Staphylococcus aureus*, and *Streptococcus faecalis*, were studied for their survival following freezing, frozen storage, and thawing of a single food ingredient.

When frozen in a 0.0003 *M* phosphate buffer numbers decreased sharply in 24 hr., thereafter more slowly over 10 weeks. In corn syrup, waxy rice flour, and egg white survival rates were much greater.

Sodium alginate medium was irregular in its behavior; *S. aureus* counts were zero after 24 hr., while *S. typhimurium* showed relatively high counts after 4 weeks of frozen storage. In general, survival was greater at the lower of the 2 storage temperatures—11F. and −22F.—*Applied Microbiology* 8(2), 109-13, 1960.

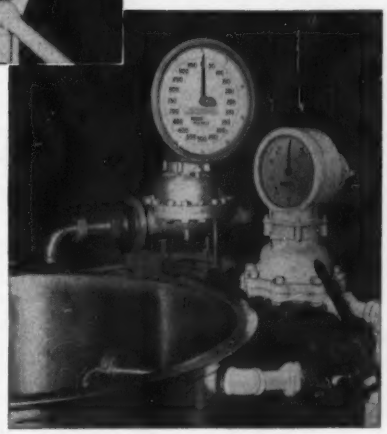
Every Batch of Old Dutch Salad Dressing the Same — in Consistency and Taste

Niagara Displacement Meters insure CONTINUOUS QUALITY



Ingredients of each batch are run in quickly . . . accurately with Niagara Meters in the Old Dutch, Inc. Plant, Blasdell, New York.

Close-up of Niagara Meters showing large vertical registers with easy to read figures for accurate measurement.



Old Dutch Salad Dressing has won wide acceptance for its palate-pleasing piquancy. Safeguarding the ability to maintain this flavor acceptance are two Niagara Displacement Meters, one for measuring the oil and the other the dressing mixture.

Prior to the installation of these Niagara Meters, it was necessary to completely remove all salad dressing from the premix tank before starting another batch. This was necessary because ingredients were measured by the dip stick method.

Now, correct amounts are metered to the tanks by the Niagara Meters regardless of amount of salad dressing left in the tank from previous batch. Result: Faster, accurate preparation of each batch for uniform quality and lower costs.

Let us show you how Niagara Meters can reduce *your* formulating costs. Mail coupon today.

BUFFALO METER COMPANY, Inc.
2910 Main Street, Buffalo 14, N. Y.

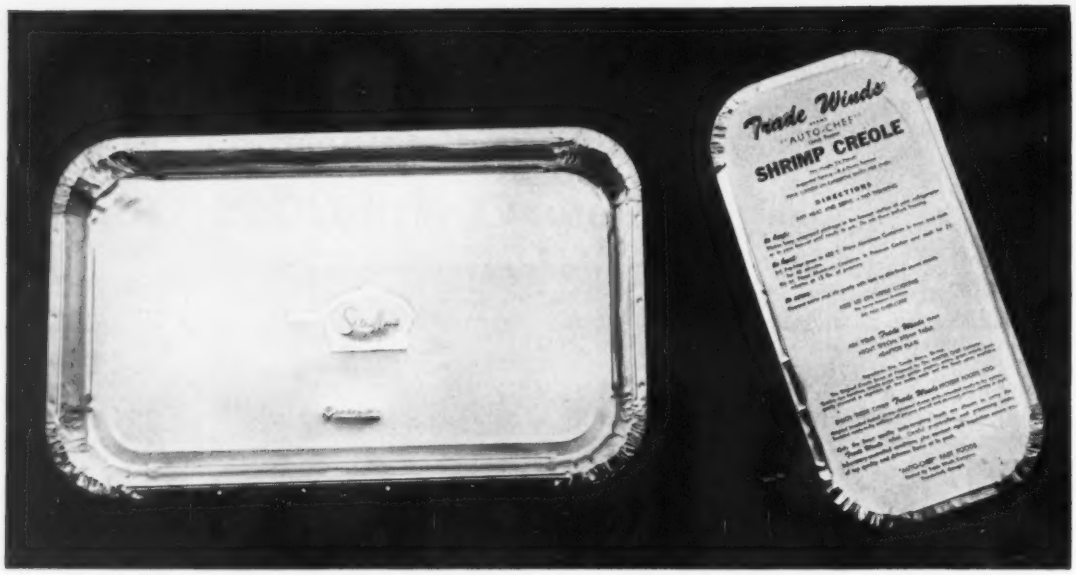
☐ Please send me additional information on Niagara Meters.
☐ Please have representative call.

NAME_____

ADDRESS_____

CITY and STATE_____

BUFFALO METER COMPANY
INCORPORATED
2910 Main Street • Buffalo, New York



GROWING NUMBERS of frozen entrees are being offered in new institutional-size rigid foil container. Shown here are 48-oz. and 100-fl. oz. sizes. Larger unit is styled for easy steam-table use in restaurants.

Functional-Plus Foil Tray . . .

. . . spearheads new sales in mass-feeding outlets. And retail version is under test for large-family users

MATE AN OBLONG, vertical interrupted curl-flange aluminum container with a thin foil-paperboard cover and you breed a versatile package for the up-and-coming frozen entrees.

The two together form a volume feeding container—a combination hailed as possessing high strength, low weight, and plus-resistance.

Specifically, this 0.0045-gage-foil container (Ekco-Alcoa) is geared to increase emphasis on use-convenience in the institutional trade. It's a disposable rigid tray of standard ½-steam-table size that's adaptable for packing, freezing, shipping, heating, and serving.

Institutional users have been quick in their praise of these "automatic chefs." That's because the products—

. . . **Require no preparation, eliminate waste.** Food is kept frozen and used as needed—by simply sliding the container into an oven for ready serving just minutes later.

. . . **Have uniform quality,** since entrees are mass-produced.

. . . **Are packed for portion-control.**

. . . **Store easily**—40-48-oz. packs stack neatly in user's freezer space.

. . . **Can be heated in many ways**—in ovens, in pressure cookers, on burners.

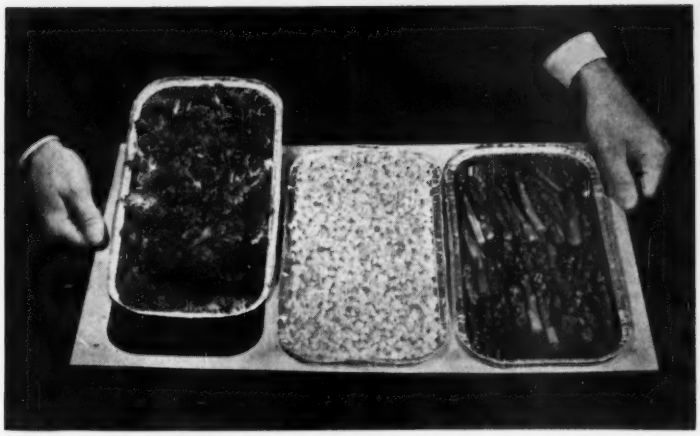
. . . **Fit in with existing steam tables.** Once heated, they're inserted in an aluminum adapter plate mounted over the steam table. Plate, with 12x20-in. openings, holds three containers.

. . . **Abolish the need to clean steam-table utensils,** since containers, once emptied, are simply disposed.

Parade Starts

One of the first to take advantage of these volume feeders is Wilson & Co.—now packing 27 different frozen precooked entrees in the 3-lb. aluminum serving pans (see accompanying panel) for in-plant feeders and industrial caterers. Company also markets them to firms supplying meals to college sororities and fraternities.

Armour, too, has adopted the new packs for institutional sales. Firm packs frozen beef chop suey in 2½- and 5-lb. containers, meat loaf in



AFTER OVEN-HEATING, container-packed foods are slipped into openings in steam-table adapter—all ready for serving. Empties are disposable, thus abolishing cleaning of pans.

3-lb. units, and mushroom gravy with sirloin tips in 5-lb. trays.

Another packer, Trade Winds, of Thunderbolt, Ga., has just come out with a 40-oz. pack of frozen shrimp creole. Company plans to add more products to its "Auto-Chef" line.

Specially designed for Stouffer's, Cleveland, is a 100-fl. oz. container ($1\frac{7}{16}$x$9\frac{3}{8}$x$16\frac{1}{4}$ in.). This is a 0.007-gage tray fitting a different line of steam table used by the firm for industrial catering. Also fulfilled is the company's need for something larger than a 48-oz. package.

As with the 48-oz. units, the larger tray employs a foil-laminated paperboard cover that takes a lace-type closure. Both sizes of containers are crimp-sealed on semi- or automatic closure machines.

Encouraged by the container's reception in the institutional field, freezer firms are eyeing the consumer trade. Object here is to tap another promising outlet – the larger-size families that are unhappy with 10- and 12-oz. cartons. And housewives sponsoring parties also are seen as buyers.

Test marketing a retail-style pack in the Chicago area is Encore. Offered are chop suey, spaghetti and meat sauce, sliced beef and gravy, and sliced beef and barbecue sauce.

Also new is Armour's "Pan O' Gold" line of frozen entrees that will be tested soon. Packed in 15-oz. casserole-style 0.0035-gage foil are such two-serving items as deep-dish ham pie, escalloped potatoes and ham in sauce with cheese, chicken tetrazini, beef goulash with noodles (Hungarian style), and lima beans and bacon in sauce.

Containers are gold-coated, sealed with waxed paper covers. All (with exception of ham pie) are packed in oblong $1\frac{1}{4}$x$4\frac{7}{8}$x$7\frac{3}{8}$-in. units with the interrupted vertical curl flange. Ham pie package size is $1\frac{3}{8}$x$4\frac{9}{16}$x$5\frac{5}{16}$ in.

–FE Staff

What Wilson Is Packing

These are the appetizing frozen entrees Wilson puts up in the new 3-lb. serving pans:

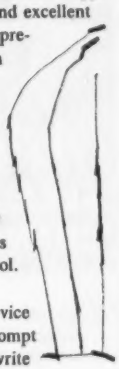
Pot Roast of Beef & Gravy
Sliced Turkey & Giblet Gravy
Sliced Pork Loin & Gravy
Ham & Raisin Sauce
Marcaroni & Cheese
Spanish Rice
Tuna Fish & Noodles
Chicken A la King
Chicken Chow Mein
Ham A la King
Yankee Pot Roast With Noodles
Sliced Beef with Barbecue Sauce
Sliced Pork with Barbecue Sauce
Spaghetti & Meat Sauce
Welsh Rarebit
Chili Mac
Chili Con Carne
Turkey A la King
American Chop Suey
Beef Stew
Creamed Chip Beef

Jefferson Chemical
is your best source for
high purity

U. S. P. PROPYLENE GLYCOL

Most Versatile Polyol
for Use in Foods, Flavors
and Extracts

U. S. PHARMACOPOEIA Grade Propylene Glycol has low toxicity and excellent solvent, hygroscopic and preservative properties which make it preferred in a great variety of food processes. Food flavor, color or emulsion solvent; flavor extractor; humectant in packaged food products . . . these are a few of the proved applications for U.S.P. Propylene Glycol.

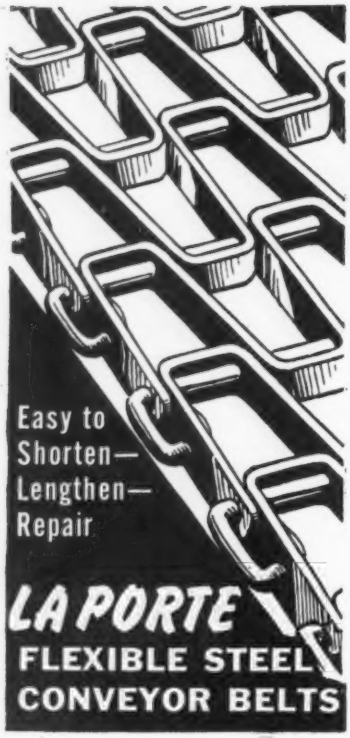


For helpful technical service on any application, or prompt delivery-price information, write to Jefferson Chemical Company, Inc., 1121 Walker Ave., P. O. Box 303, Houston 1, Texas.

JEFFERSON CHEMICAL COMPANY, INC.
HOUSTON • NEW YORK • CHICAGO • CLEVELAND
CHARLOTTE • LOS ANGELES

Ethylene and Propylene Oxides, Glycols, Dichlorides • Ethanolamines
Morpholine • Piperazine • Polyethylene Glycols • Nonyl Phenol
SURFONIC® Surface-Active Agents • Ethylene and Propylene Carbonates
Caustic Potash • Caustic Soda • Soda Ash • Sodium Bicarbonate

Essential Chemicals From Hydrocarbon Sources



BY simply removing a cross wire or two with a pair of pliers, you can take out, add to or replace one or more sections of La Porte Belts. It takes only a few minutes and the belt need not be taken from the La Porte Drive Sprocket. The cross wires are readily replaced and downtime is held to a minimum.

But there are other money-saving advantages of La Porte Flexible, open-mesh construction. It speeds up drainage, it facilitates sterilizing with a steam gun. It permits the circulation of air and liquids around products in process. And prevents products from rolling off. La Porte Belts are built for long service and are easily installed.

If you freeze, can, dehydrate, pickle, package, store or ship food, it will pay you to use La Porte belts. Available in ½" x 1", or 1" x 1" in any length and practically any width. Ask your mill supplier or mail coupon for illustrated literature and prices.

MAIL COUPON TODAY

LA PORTE MAT & MFG. CO.
Box 124
La Porte, Indiana

Please send free literature on your Conveyor Belt.

NAME_____

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CITY_____ STATE_____

PACKAGING

BEST HANDLING is easy handling on this weighing-bagging line that mounts scales over product-feeding and package take-way conveyor and includes trough directly over checkweigh scales.

'Scales' Down Problems

——with smart layout of conveyors and check-weighers that speeds bagging-weighing operation

JUMP OUTPUT, and you sometimes find yourself wrestling with this problem: More people needed to package and weigh finished product.

And the headache can be big—unless you minimize it with plan-ahead scheduling that promotes orderly flow of materials.

That's how Jeffrey Cheese stayed ahead when it recently hiked output of its Swiss cheese slices from 1,800 to 2,700 packages per day (8-hr. shift). Despite this 50% increase, company needed only 7 more girls to weigh-pack stacked slices instead of the 12 more it originally figured on.

This was accomplished by integrating a labor-saving layout of U-shaped conveyor line and check-weighing scales (Exact Weight) mounted over a powered belt. Setup routes product from slicing-interleaving machine (Packaging Enterprises), past weighing-bagging station, on to 2-head pouch sealer (Flex-Vac).

Placing everything the girls need within easy reach—conveyor, slicer, scales, and pouch sealer—speeds weighing and bagging, cuts fatigue.

Blocks of cheese (80-lb.) are cut into 10-lb. loaves, which are fed one at a time to slicer that also interleaves, stacks, and weighs. Loaves are secured by toggle-lock clamps for uniform slicing.

Constant weight-checking takes care of variations caused by cheese density as well as size and number of holes in product. Slice thickness is controlled through built-in scale, with operator adjusting the machine while it's running. Result: Greater accuracy in package weights and faster checkweighing.

Stacks of sliced cheese then drop onto 30-fpm. conveyor that carries them under seven Shadograph scales (Exact Weight). Operator removes stacks from the conveyor, check weighs them, adds or removes slices to make up proper weights, inserts cheese into cellophane-polyethylene (6- or 8-oz.) pouches, and then feeds bags into the same conveyor going to sealing machine. Speed per operator is 180-190 packages/hr.

Weighing-packing operations are simplified by having the conveyor within easy reach of the girls, mounting scales over the take-away belt, and placing "shoe horn" type jigs above the scales for insertion of weighed slices into the pouches.

Moreover, scales provide speedier, more accurate weighing through "ultra-visible" weight indication—parallax reading (and friction) abolished by projecting light image through condenser lens into mirror and reflecting onto frosted glass dial.

Also helping out is use of special lightweight parts (lever, product platter, etc.) to overcome inertia and bring the scale to balance more rapidly.

In the operation's last step, filled pouches are fed to 2-head sealing machines, where they're vacuumized, filled with inert gas (nitrogen), and heat-sealed. Pouches are then spot checkweighed, and rejects (improper seals) are repackaged.—*FE Staff.*

CIRCLE 97 ON READER SERVICE CARD→

It's true, you *can* package sour cream in Pur-Pak cartons when you use ESKAR Dairy Wax Special. Carton resistance has to be good, of course, and it is with ESKAR. In one test, a dairy stored sour cream in ESKAR Special coated cartons for two weeks with no effect on carton or contents.

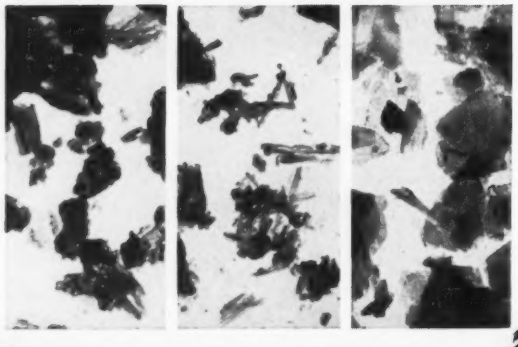
ESKAR Dairy Wax Special gives cartons an especially good, uniform film with a fine sheen. It penetrates the stock in just the right amount to give the cartons improved firmness. And build-up of wax that causes jamming on the machine is minimized or eliminated completely when you use ESKAR Dairy Wax Special.

Perhaps ESKAR Wax Special can help you open up new markets for sour cream—and new economies in packaging. Get more facts about this wax. Call the Standard Oil office nearest you in any of the 15 Midwest or Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

You expect more from **STANDARD** *and you get it!*

Electron micrographs of Micro-Cel A, C and E show particle structures ideal for food applications.

1μ



Micro-Cel helps keep food mixes bone dry!

Micro-Cel®, Johns-Manville's new synthetic calcium silicates, answers caking problems. Highly absorbent, it remains a free-flowing powder after absorbing triple its weight. High bulk (4½ lbs. to a cu. ft.), irregular particle shape and high surface area, make it ideal for coating sticky and hygroscopic particles. Micro-Cel gives low cost per pound-volume. To keep food mixes free-flowing, even under the worst conditions, try Micro-Cel. For information, samples and assistance, mail coupon below!

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JOHNS-MANVILLE, Box 14, New York 16, N. Y.
In Canada: Port Credit, Ontario.

☐ Please send additional data.

☐ Please send free sample of suitable grade of Micro-Cel for use in:_____

☐ Have local Sales Engineer contact me.

Name_____ Position_____

Company_____

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City_____ Zone____ County_____ State____

Celite Division synthetic silicates used as anti-caking agents up to 2% are not considered food additives as defined by FD&C Act Amended, Section 201(s).

EXTRA PROTECTION of poly-Saran-Mylar combination stretches out product's shelf-life, and helps . . .

Fish-in-Bags Hook Plus-Sales

CHALK UP another gain for flexible packaging—a 2-layer film pouch for vacuum-packed frozen fish steaks and fillets.

San Juan Fishing & Packing Co., Seattle, called the largest seafoods freezer in the West, is now marketing these products in triplex extruded film pouches, placed in window-type consumer cartons.

Dehydration and oxidation, major distribution problems with frozen fish, are significantly recorded by the new package, San Juan reports. Under normal refrigeration (45 F.) pouch keeps product sweet and fresh, without color change, for at lease 4 days after thawing. Film bag is said to extend product storage life more than double that of conventionally-packaged fish, fits snugly to the product, and remains crystal clear, frost-free.

The triple laminate is composed of 2-mil polyethylene (for heat sealing) on the inside, and ½-mil Saran-coated Mylar on the outside. Mylar gives package its strength, while Saran protects product from ultra-violet rays, also serves as a gas barrier.

When developing this new package, San Juan executives decided to overhaul and redesign their full line.

Principal change in label colors was substitution of two-shades of sea green for the previous 'landlubberly' blue. The San Juan flag, superimposed on a small fish, has been simplified. Brand name now is part of the larger, conventionally designed outline of a fish that serves as the transparent window.

Box (6¼x6½ in.), with Marathon's "Glamakote" surface finish, has die-cut window for product visibility. Bold, green lettering on ends identifies specific product. Shipping cases are color-coded—green for halibut, red for salmon, blue for swordfish, and orange for others.

Steaks for the San Juan or Ship Ahoy brands, the company's featured labels, are 12 oz. or better, and ⅞-in. thick. They are vac-packed (vacuum is 29 in.) by a Flex-Vac unit. For salmon, vacuum is modified by addition of a small quantity of food-grade nitrogen to prevent loss of oil from product.

Vac-pack process is also used for true cod fillets, Alaska King Crab meat, and other fillets. Fillets are code-packed in pouches with orange background for rex sole, light green for sole, and yellow for cod.

San Juan uses Continental Can's "Thermolam" poly-Mylar film for boil-in-bag seafood specialties, such as halibut a la king, halibut in cheese sauce, curried shrimp, and crab Newburg. These 4-oz. packages are packed two to a carton, with a full-color product photo.

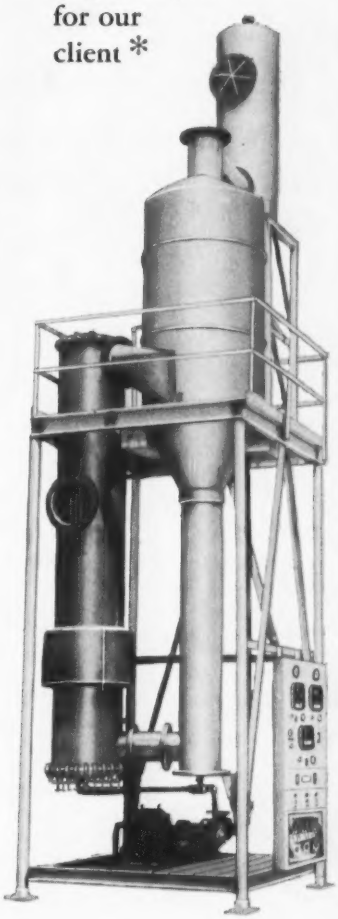
The vac-packing presently accounts for only 10% of the company's frozen fish production. General Manager E. A. Ruthford predicts virtually entire output will be packed in this manner within 3 yr.

—End

RAY BLOOMBERG
McGraw-Hill News Bureau, Seattle

this **EVAPORATOR**

was custom-engineered to do a specific job for our client *



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THERMOVAC will custom-engineer and fabricate the processing equipment best for your job!

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CIRCLE 99 ON READER SERVICE CARD 99

This is a Knife

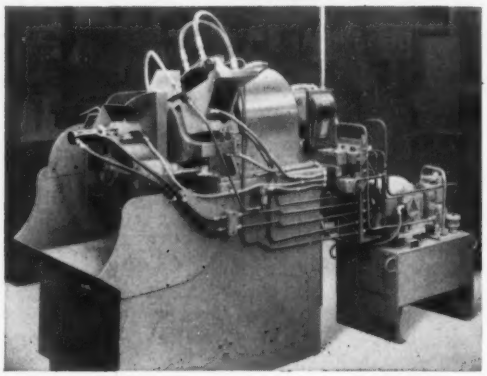
. . . it was *designed* by Urschel
. . . it was *engineered* by Urschel
. . . it was *manufactured* by Urschel
for an *Urschel machine*

Closeup of specially treated Urschel knife edge

It is the most important part of the machine because it cuts the product. The thickness of this knife is controlled to less than one ten-thousandth of an inch. Knives of such accuracy have *never* been made by others. This accuracy makes it possible to stack many knives on a knife spindle with such precision that knives can be replaced without adjustment and without having the knife rub against mating parts. This accuracy helps to reduce maintenance to a minimum.
Induction heating is used to harden only the edge of the knife to a greater hardness than would be practical to harden the entire knife. The hard edge causes the knife to stay sharp for an extended period. Soft material backs up the hard edge so that the knife will bend rather than break into fragments if the knife strikes a foreign object.
The selection of stainless steel in this knife and its treatment is based upon many years of metallurgical experience in the testing of stainless steels for the cutting of food products.

This is a Machine

. . . it was *designed* by Urschel
. . . it was *engineered* by Urschel
. . . it was *manufactured* by Urschel
for the *making of Urschel knives*



This is only one of many machines made in the Urschel shops for the manufacturing of knives. Standard machine tools cannot be purchased for the economical making of Urschel knives for the required rigid specifications. Research is continuously carried on at Urschel Laboratories in search of better methods and better materials for the manufacture of knives.

URSCHEL
LABORATORIES INC.
VALPARAISO, INDIANA

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New and improved techniques of process drying, exclusively employed by Firmenich, yield powdered flavors that flow freely, are dust free, and give you the finest precision in flavoring your products. These important developments in quality flavoring will improve the taste appeal of your products . . . extend their shelf life . . . give them package-to-package uniformity that captures customer preference. Samples of Firmenich Powdered Flavors, with technical information on their practical application, on request.

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SPARKLING SALES APPEAL. Crystal clear, with brilliant gloss. Just the right flexure . . . neither too limp nor too stiff. Shows off foods to their best advantage. Prints beautifully, too!

BETTER PROTECTION. Amazingly strong even in thin gauges. High resistance to tearing and abrasion. Ideal odor and moisture barrier. Keeps freshness and flavor in, odors out.

LONGER PROTECTION. Since Olefane does not become brittle or deteriorate with age, longer shelf life is possible for your products. (And your roll stock in storage will always be fresh and useable.)

MACHINES SMOOTHLY. Has just the right stiffness and slip to perform smoothly on wrapping machines designed for thermoplastic film . . . *plus a non-critical heat seal range.*

MORE FILM PER POUND. Highest yield of any packaging film. A real opportunity for savings.

LEARN MORE ABOUT THIS VERSATILE NEW PACKAGING FILM...
AviSun Technical Specialists can answer your questions about specific food items and help you plan for better wrapping at lower cost with Olefane.

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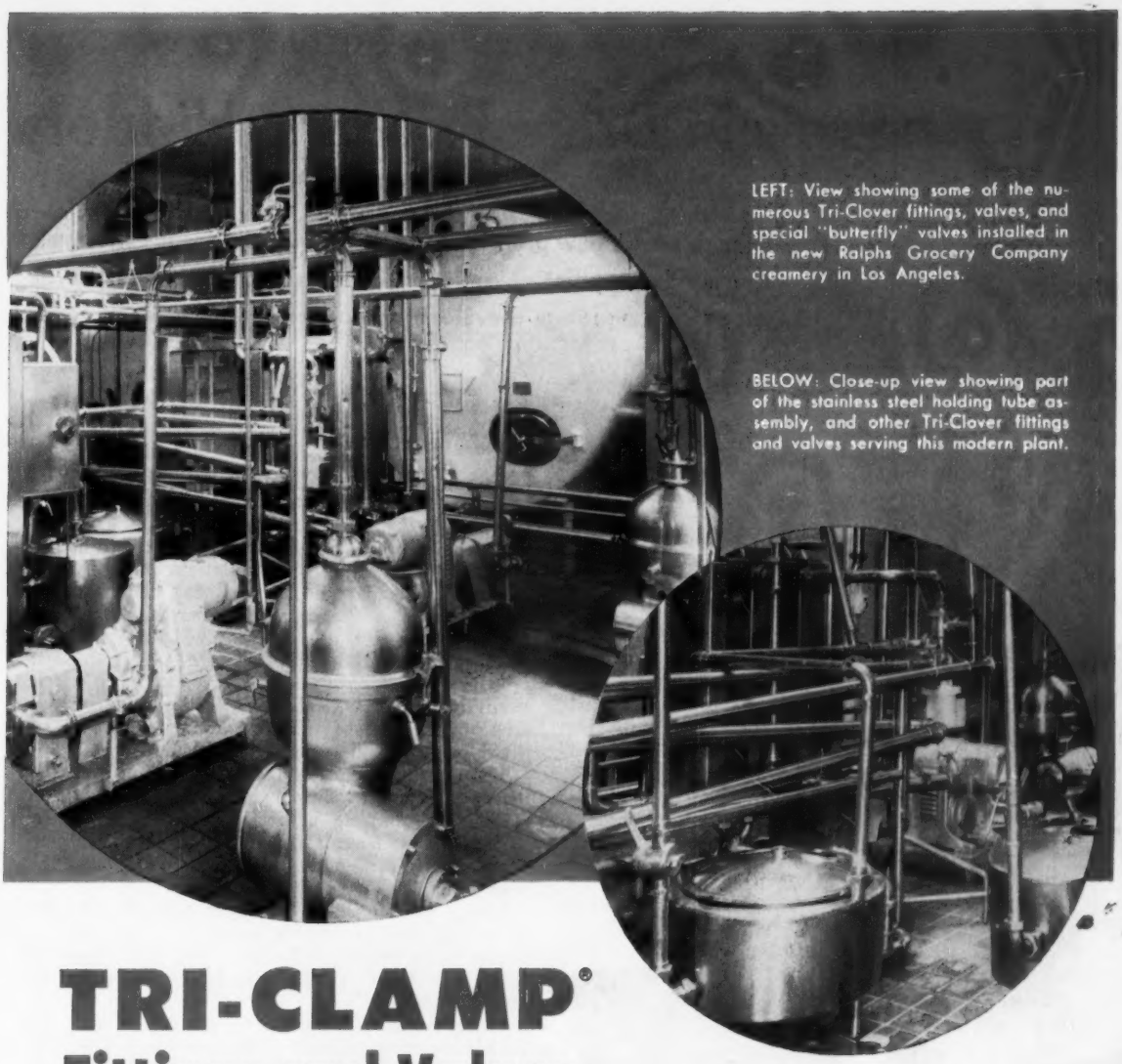
AVISUN CORPORATION 347 Post Road • Marcus Hook, Pa.

*a trademark of AviSun Corporation



LEFT: View showing some of the numerous Tri-Clover fittings, valves, and special "butterfly" valves installed in the new Ralphs Grocery Company creamery in Los Angeles.

BELOW: Close-up view showing part of the stainless steel holding tube assembly, and other Tri-Clover fittings and valves serving this modern plant.

TRI-CLAMP® Fittings and Valves

simplify installation and maintenance in Ralphs Grocery Company Plant

The Creamery Division of Ralphs Grocery Company, a progressive west coast organization, has established a reputation for highest quality milk products. Helping to keep sanitary standards high at this modern creamery are numerous Tri-Clover sanitary stainless steel fittings, valves and a complete holding tube assembly.

Practically all of these fittings are of the snap-action "Tri-Clamp" type, which allows rapid and efficient cleaning of "cleaned-in-place" lines. Another feature of these fittings is that less space is required for assembly and disassembly in a "take-down" line, since no tools are required.

Follow the example of progressive dairy and food plants . . . install Tri-Clover sanitary stainless steel fittings, valves, pumps, tubing and specialties in *your* processing lines.

See your nearest Tri-Clover Distributor.

S-499

IN CANADA:
Brantford, Ontario

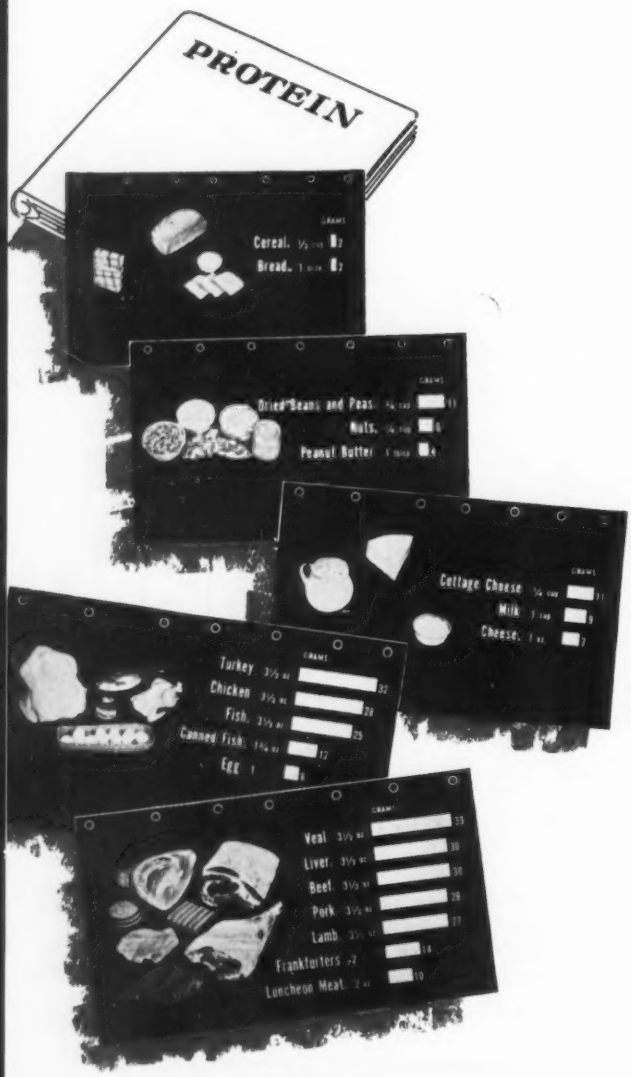
EXPORT DEPARTMENT:
8 S. Michigan Ave., Chicago 6, USA—Cable TRICLO, Chicago

TRI CLOVER

LADISH CO.
Tri-Clover Division
Kenosha Wisconsin

Protein Drive Exploits 'Hidden

Armour's brisk new program plays up nutrient as meat's strongest merchandising point. Plan is implemented by national and local ads and long-range development of more nutritional meats



NUTRITION CHARTS, newly issued by National Live Stock & Meat Board, are being adapted by Armour to get AMP message across to company employees. Front cover of company house organ vividly shows how favorably meat compares with other foods as protein source.

INCREASED AWARENESS of the vital role played by protein has made that nutrient an important merchandising vehicle. Cereal makers and bread bakers have hitched their marketing campaign to the theme.

Probably one of the most ambitious programs ever mounted along that line is now being undertaken by Armour. Convinced it's got that "something different" marketers strive for, this company will base its record advertising budget this year on AMP–Armour Meat Protein.

Pushing proteins fits in with the firm's long-range drive to enhance the value of raw materials through processing and build stronger brand loyalty.

The reasoning, explains President W. W. Prince, is that meat's biggest selling potential lies in its provision of the most complete, best-balanced protein. And, he stresses, packers haven't been aggressive enough in merchandising this essential nutritive that's called "the stuff of life."

Meat's precise nature is largely a mystery to the housewife, Armour officials point out. She buys it primarily for eating satisfaction. But price, always a strong consideration, may prompt her to settle for "meat substitutes."

"Meat provides all the protein you need," says John C. Mommsen, v.-p., sales of Armour Foods Div. "If you eat enough of it, you don't need the other so-called protein foods."

The packer's new campaign–a significant merchandising step that well might be duplicated for other foods –has two major elements that make it one of the most progressive drives ever carried out in the meat field: (1) Concentrated promotions, and (2) pace-setting research.

Together, these add a new dimension to meat merchandising. Armour will emphasize the nutritional aspects of meat's complete protein supplying all 10 essential aminos needed daily to build and restore vital body cells. The program explains and stresses the nutrient's importance to good health.

The AMP symbol is being used on TV and radio, in magazines, and on every meat product package. Such repeated use tells and retells customers that meat is the prime source of complete protein.

Dynamic Food Advertising

An impressive national and local program of colorful ads has been geared to reach–through six magazines –14 million families a month. Start was in *Look* (Dec. 22), with a full-page, four-color ad scheduled in every issue for a year.

Potential' of Product Value

Ads are basically of two types. Representing one of these types are layouts explaining the natural qualities and benefits of meat protein in an appealing informative display. Then there are the company's product ads also merchandising meat protein by carrying the AMP symbol and story. For example, a two-page spread in the Jan. 19 *Look* was headlined "Protein Is What Little Boys and Girls Are Made Of."

The expanded schedule of national advertising also includes *Everywoman's/Family Circle, Woman's Day, Ebony, Sunset, True Story,* and *True Confessions.* The total here runs to 72 pages (not including *Look's* overall schedule of 26).

In appearance as well as content, the ads break with the past. Parting with realistic product photography, they're characterized by idealized high-style visualizations of hams, sausage, franks, bacon, and turkeys. This is achieved, explains Advertising Manager Noel C. Peltier, by a three-dimensional paper-sculpture technique. Effect is to make this food advertising distinctly different.

All advertising—national and local—carries a special "recipe card" border and type-face to create a strong family resemblance for every product pitch and a brand preference.

Hard-hitting impact messages are also carried out in local newspapers, plus TV-radio. A consistent program featuring new-product newspaper advertising in most markets will display the symbol and tell the story. In addition, all TV and 60-sec. radio-product commercials will close with the protein message.

What's more, even fresh meats prepackaged by retailers are included. Here, this packer's fresh meat-insert program—first attempt to differentiate company's products from unidentified fresh meats sold by chains—has been modified to include AMP foil tags.

Employees aren't being left out, either. A house organ, *The Armour Magazine,* carried a feature story on AMP and the nutritional value of meat.

Armour's consumer service department is pitching in too. It's now preparing a booklet on the nutritional values of meat. It will be distributed to home economics teachers.

Exciting In-Store Action

Further, there's follow-through at the local-store level—focusing on consumer interest and awareness of protein benefits. Colorful point-of-sale promotions help identify stores as headquarters for meat protein. Banners and posters are aimed to accent the meat department (responsible for over 25% of overall store volume) as the most important shopping center.

Banners feature these themes: "Make Your Meat Department Your Protein Headquarters," "Parade of Meat Protein," "Meat Protein Body-Builders Sale," and "Meat Protein Treasure Chest." Accompanying each banner are eight product and protein-promoting posters.

It is Armour's view that nutrition is thus being spotlighted where it rightfully belong—in the meat department. This is seen increasing meat's importance as a traffic builder, as well as helping sales throughout the store.

Since the program broke last December, retailer response has been excellent, Armour says. Typical have been these comments from top chain executives: "You're definitely on the right track in promoting protein's nutritional benefits." "It's about time a meat packer promoted the fine nutritional benefits of meat."

Research & Development

Armour's AMP campaign is part of a long-range R&D program aimed at developing meats and meat derivatives that provide maximum nutritional benefits. In a unique research project that has attracted wide attention, the packer is working with independent ranchers to develop improved strains of cattle in all beef breeds.

Beginning at the only natural place for cattle improvement—the range itself—the company hopes to produce animals with more lean-meat protein possessing the desired qualities of flavor, tenderness, and juiciness, with less fat per unit of weight. At the same time, the company is seeking more uniform beef carcasses and greater economy of production.

The plan centers on breeding production-tested sires to range cows through latest advances in artificial insemination. Records will be kept on the progeny, from birth until animals are marketed as beef.

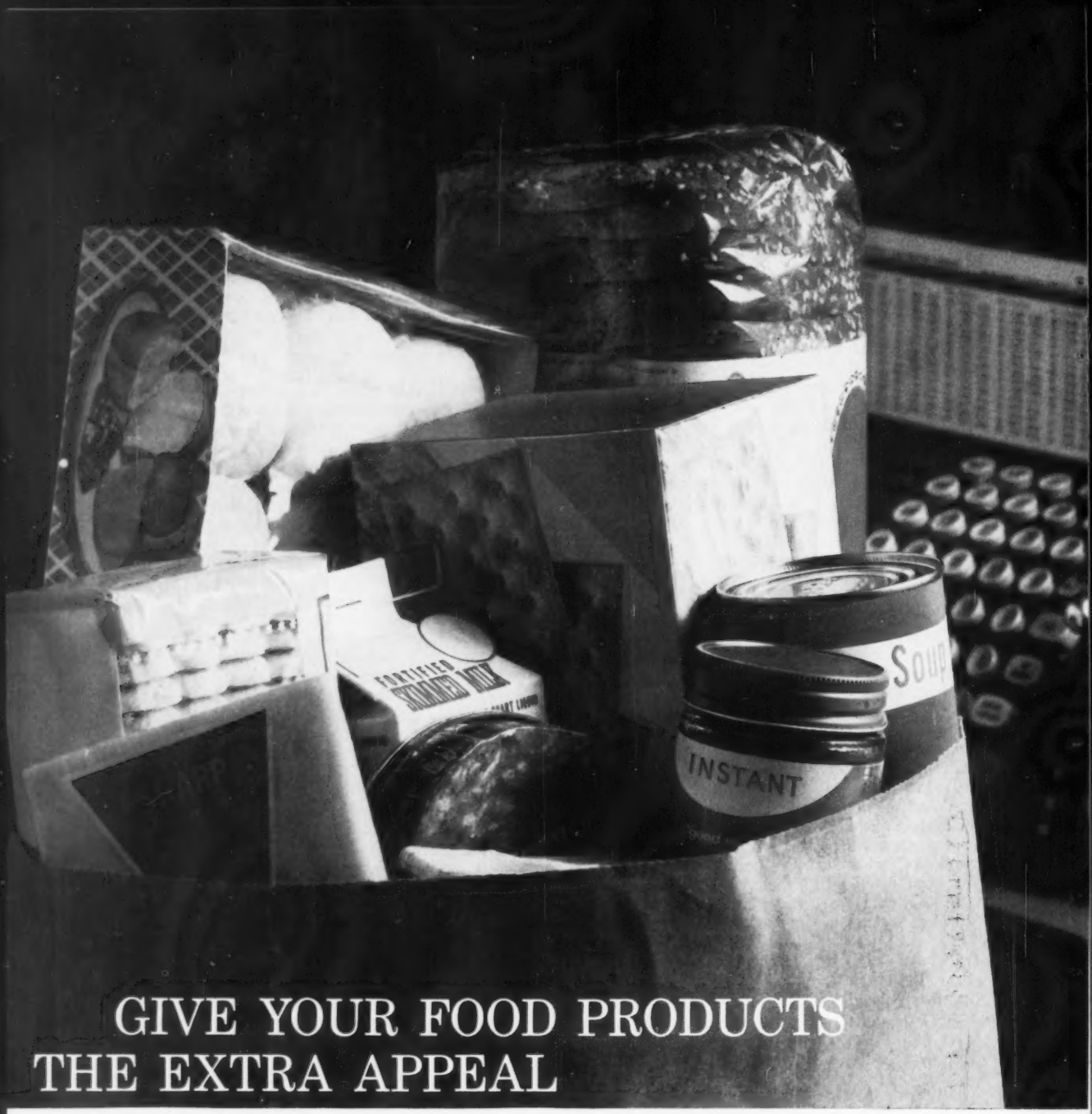
Desirable qualities in beef cattle, it's been learned, are highly heritable. The tested sires have proved their ability to produce calves that show a better feed-conversion efficiency and yield carcasses that grade and cut better than most on the market. And the company is convinced that research results will prove beneficial to the entire meat field.

Project is organized as Beef Cattle Improvement Research, with headquarters in Denver. In '59, BCIR had arrangements with 42 ranchers in a dozen states. Some 15,000 cows were successfully bred, and their calves will be available for study in '60 and '61. Now, over 1,000 cattle are on feed from '58 matings.

So here a packer and stock growers are pioneering in working together to upgrade beef quality on a large scale, range-to-table testing program. It's hoped that these improved lines of cattle will show a greater ability to convert feed into protein muscle rather than fat. They may provide cuts with a larger eye, better marbling, more even fat distribution, and greater appetite appeal.

Another development concerns a protein extract containing all the essential aminos. The extract (bland, colorless, and odorless) is easily adapted as an additive to meats or other types of foods. The researchers even see the possibility of adding this extract to many foods, to be labeled "Fortified with meat protein." Researchers are also looking into the extracting of proteins from other products, as eggs, poultry, etc.

Armour scientists meantime are exploring the potential of freeze-drying meats (and other foods) to provide a stable meat protein of a different kind. They're engaged in cooperative research with scientists of the British Ministery of Foods in developing the advanced techniques of freeze-drying. Through low-temperature freeze-drying, such products will keep indefinitely without refrigeration.—*FE Staff*



GIVE YOUR FOOD PRODUCTS THE EXTRA APPEAL THAT EXCITES RETAILERS!

Move your food products onto retailers' shelves in greater volume. Give them added consumer appeal with Western's high-quality dairy ingredients.

Western offers you the largest variety of milk products available from a single source. You can rely on Western to recommend the exact ingredient or fraction of milk best suited to your operations. And you can always turn to Western for expert technical assistance.

Every Western product—commodity or specialty—is manufactured under the most rigid testing and control requirements. Each shipment is backed by a guarantee of satisfactory performance.

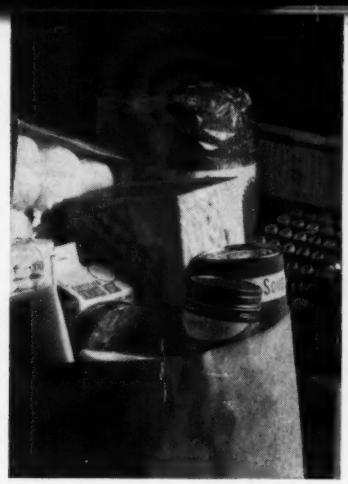
Let us show you how one or more Western products can fit profitably into your manufacturing processes. Send for technical information and working samples (stating application under consideration). Address: Technical Service, Department 16F.

CIRCLE 106 ON READER SERVICE CARD

WESTERN CONDENSING COMPANY

Appleton, Wisconsin

World-wide Producer of Quality Milk Products



WESTERN PRODUCTS THAT GIVE FOODS EXTRA APPEAL!

VALLEY FRESH SWEET DAIRY WHEY
A 100% pure dairy ingredient that meets or exceeds all U.S. Extra Grade standards. It improves product quality and cuts costs when used as a partial replacement for sugar, as part or all of the dairy solids, or as an additional ingredient in formulas with marginal dairy solids or sugar requirements.

FOREMOST LACTOSE
Pure milk sugar that will add appeal to all manufactured food products. It is low in sweetness, soluble, free flowing, boosts flavors, absorbs pigments, controls sugar crystallization and offers nutritional advantages.

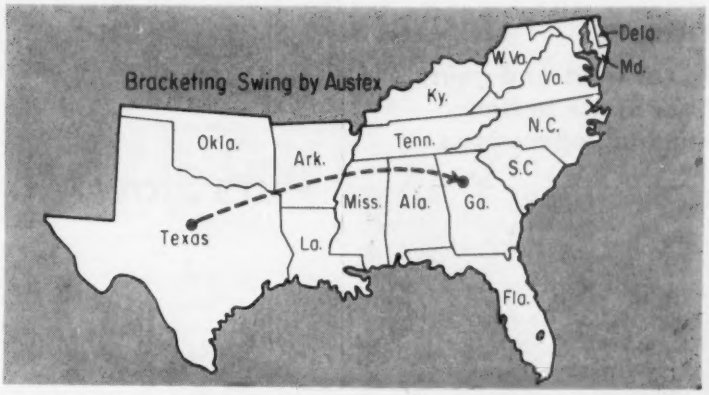
VALLEY FRESH TEKNIKAN
Gives food a natural, accentuated dairy flavor. Recommended for fillings, icings, toppings, cheese products and all other formulas requiring dairy solids and a pronounced dairy flavor.

VALLEY FRESH ANGEL WHIP
It whips! Plant tests prove Angel Whip provides superior marshmallows, toppings, fillings and other aerated products.

VALLEY FRESH DAIRY BLEND
A Western exclusive blend of high quality dairy solids. Packaged as a unit to ease your storage problems. Lets you incorporate premium dairy solids in your formulas at lower cost.

For information on any or all of these products, write Technical Service, Western Condensing Company, Department 6D, Appleton, Wisconsin

WESTERN CONDENSING COMPANY
Appleton, Wisconsin
World-Wide Producer of Quality Milk Products
DIVISION OF DAIRIES, INC.



GIRDING FOR '60s is illustrated by this move of small packer. Expansion of food plants, as means of shortening lines to consumers, has been spurred by economic revolution below Mason-Dixon Line.

Gets Set for Boom

Small firm 'maneuvers' with new plant for stronger position in up-and-coming region

WITH AN EYE to the future, forward-minded firms are building new plants throughout the Southeast. Objective: Establishment of a strategic foothold in a growth market.

Illustrating the trend is Austex Foods, an old-line Austin, Tex., firm which just opened a new plant in Conyers, Ga. (20 miles northeast of Atlanta). Initially, production will concentrate on the six items also made in Austin, but new entries are slated for the near future.

Among the new items are Brunswick stew, and sliced beef in brown gravy—both now in late-research stages at the home plant.

Top Austex sellers at present are beef stew, spaghetti with meat balls, and chili (with and without beans). Other items on the Conyers production schedule are corn beef hash and chili beans.

Why build a plant in Georgia? J. E. Kerr, v-p., marketing, tells FOOD ENGINEERING, "We tried to cover the Southeast through local warehouses. But costs of distribution and less-than-carload delivery were too high.

"Our minimum shipment, other than LCL, was 36,000 lb. carload. That's an awfully large shipment to try to sell to a retailer.

"From our new plant we can ship smaller truckload quantities. With the larger manufacturer's margin, we'll be able to promote and advertise on a sounder basis. Our previous margin just didn't give us enough to push these products as they ought to be pushed."

Austex advertising support in the Southeast will be heaviest in newspapers, supplemented by TV (up to 25 spots a week) in major cities. Newspaper displays will include half-page, four-color ads in Sunday special sections of all major cities on an every-three-weeks schedule.

Magazines will be used, too, including full-page, four-color ads in *Ladies Home Journal, Family Circle, Sat. Eve. Post, and Woman's Day.* The *Journal* ads will be split-runs, shared with Best Foods.

The company expects big pluses from the new plant. Kerr says, "With the new advertising, along with better freight service to retailers, our volume in the Southeast should multiply four to five times in the next 5 yr. In the first twelve months alone, sales from the Conyers plant should hit $3.5 million."

Starting in business around 1900, Austex claims to be the first to can chili con carne.

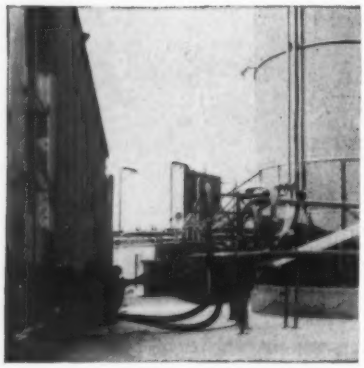
Growth has been constant since 1950, when annual gross reached $4½ million. Revamped advertising promotion programs, and a shuffled executive staff, boosted sales last year to $10 million. And the company expects to gross $12 million the current fiscal year (ending this month).

Mexine chili powder, packed in Austin, is the only Austex product with nationwide sales. However, the complete line is marketed in the Southeast and Southwest—coast-to-coast. —End

WILLIAM E. BARNES
McGraw-Hill News Bureau, Atlanta

Problem:

To cut costs and gain floor space in flour handling operations



Solution:

SPROUT-WALDRON

PNEUMATIC SYSTEM

In addition to the standard savings of 12¢ per bag which automatically applies when you shift from bag to bulk flour, Chef Boy-Ar-Dee, Milton, Penn., gained these advantages with the Sprout-Waldron pneumatic system:

1. Faster handling
2. Lower operating costs
3. Simplified maintenance
4. 10,000 square feet of floor area
5. Improved housekeeping

The system picks up from rail cars and delivers the flour to storage at rates of 20 tons per hour. It then transfers it 600-700 ft. to plant bins at rates of 6000 pounds per hour. Heat exchangers incorporated in the system keep the flour at proper blending temperature at all times.

For the full story of savings at Chef Boy-Ar-Dee request Bulletin 1-54.

CW/108

SW SPROUT-WALDRON

Muncy, Pennsylvania

Size Reduction • Size Classification • Mixing
Bulk Materials Handling • Pelleting

Puts Slow Mover Into High Gear

*From files of National Consumer Panel of Market Research Corp. of America. Material is factually correct. Identities of products and companies have been masked to insure anonymity—The Editors**

MARKETING CASE HISTORY OF MONTH

Management's problem

AS A RESULT of a merger, we have taken over an established household product whose sales curve has been declining consistently the past few years. The reason: Failure of the former management to meet the increasingly aggressive promotional and advertising efforts of competitors.

This sales decline is also causing serious distribution difficulties—resulting in poor shelf positions, fewer facings, and growing retailer apathy.

Our immediate objectives are (1) to improve our distributive position, and (2) reverse the downward sales trend. To this end we have alloted the brand a sizable advertising budget for the coming year.

In view of the promotional head-start our competitors have attained, we want to be certain that we concentrate our ad spending in those areas where our distribution is weakest. We also want to find out what kind of families make the best customers for this type of product so that we can develop the most productive advertising approach.

WHAT WOULD YOU DO?

Management's decision

We ordered an analysis of the purchase records of the families in the National Consumer Panel for the most recent 12-month period. This was designed to answer the following questions:

1) In which geographic markets were our new brand's weaknesses most pronounced?

2) Among what types of families were purchase rates for the product class as a whole above average, and were sales of our brand to these families proportional to those of our competitors?

We discovered that in cities of over 500,000, where the purchase rate for this kind of item was by far the highest, sales of our brand were considerably below average.

We also found that among younger housewives, an above-average market for the product, purchases of our brand were relatively low.

Result of action

Acting on this information, we decided to concentrate our advertising budget on television spots in large cities and to aim our selling message primarily at younger housewives.

After several months of this campaign we found that we had made significant progress in correcting our major distribution weaknesses in large metropolitan areas. Also, we achieved a dramatic reversal of our competitive position among younger housewives.

Now, with a more solid marketing base, we are better able to launch advertising and promotion programs designed to obtain sales increases throughout the entire market.

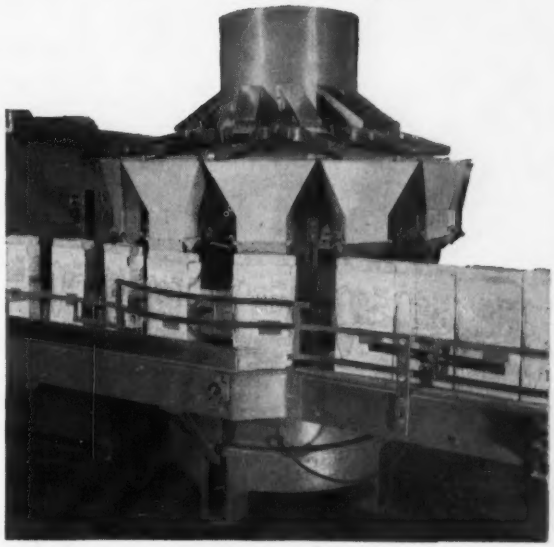
* For more information, write to Marketing Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.

ac'cu-ra-cy (*ăk'u-rà-sĭ*)

. . . *as in* WRIGHT *weighers*

Included in the Wright line of packaging machinery is a wide variety of weighing equipment.* These machines differ in function but each has this common characteristic: precision accuracy. Wright customers abhor waste. They refuse to condone overweights. Mail the coupon below for tell-all literature.

* *Examples of other Wright machines are the Wrightwrap® for wrapping, sealing, and labeling cracker sandwiches, and the Strip Stamper for applying revenue stamps to bottles.*

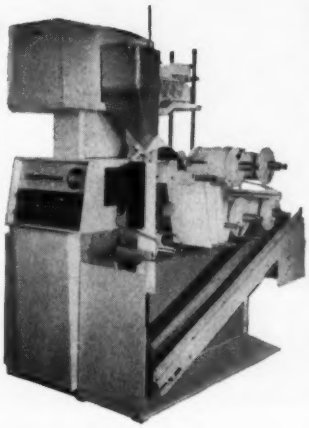


WRIGHT NT WEIGHER

Rotary net weigher for packaging the total output of a continuous production process such as a bakery oven. Synchronized carton flow. Range: 3 to 16 oz. Speed: 70 to 120 per minute.

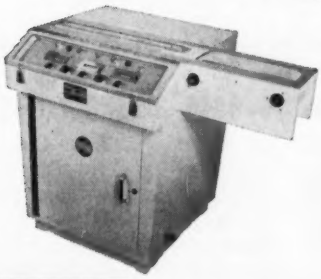
WRIGHT Advanced Bagmaster®

Completely automatic bag forming-weighing & filling-sealing system. Produces up to 45 pillow-type packages per minute in range from 2½ to 8 inches in width and from 3 to 14 inches in length. Advance features permit the precision and accurate packaging of fragile and multi-dimensional products.



HY-TRA-LEC® Weigher M

Complete line of semi-automatic and automatic, single head and multiple head net weighers for packaging free-flowing, dry products into any type package. Utilizes Wright's patented Hy-Tra-Lec weighing method. Precise. Rugged. Range: ½ to 16 ounces.



WRIGHTRONIC® Checkweigher

Electronically gross weighs each package at speeds up to 150 per minute and (1) signals whether package is overweight, on weight, or underweight, (2) registers a running visual count in each weight classification, and (3) rejects any package outside plus or minus limits. Range: 4 ounces to 2 pounds.

WRIGHT MACHINERY COMPANY
DIVISION OF SPERRY RAND CORPORATION
DURHAM, NORTH CAROLINA

Gentlemen: Please send me descriptive literature on the following machines:

( ) WRIGHT NT WEIGHER
( ) ADVANCED BAGMASTER®
( ) WRIGHTRONIC® CHECKWEIGHER
( ) HY-TRA-LEC® WEIGHER

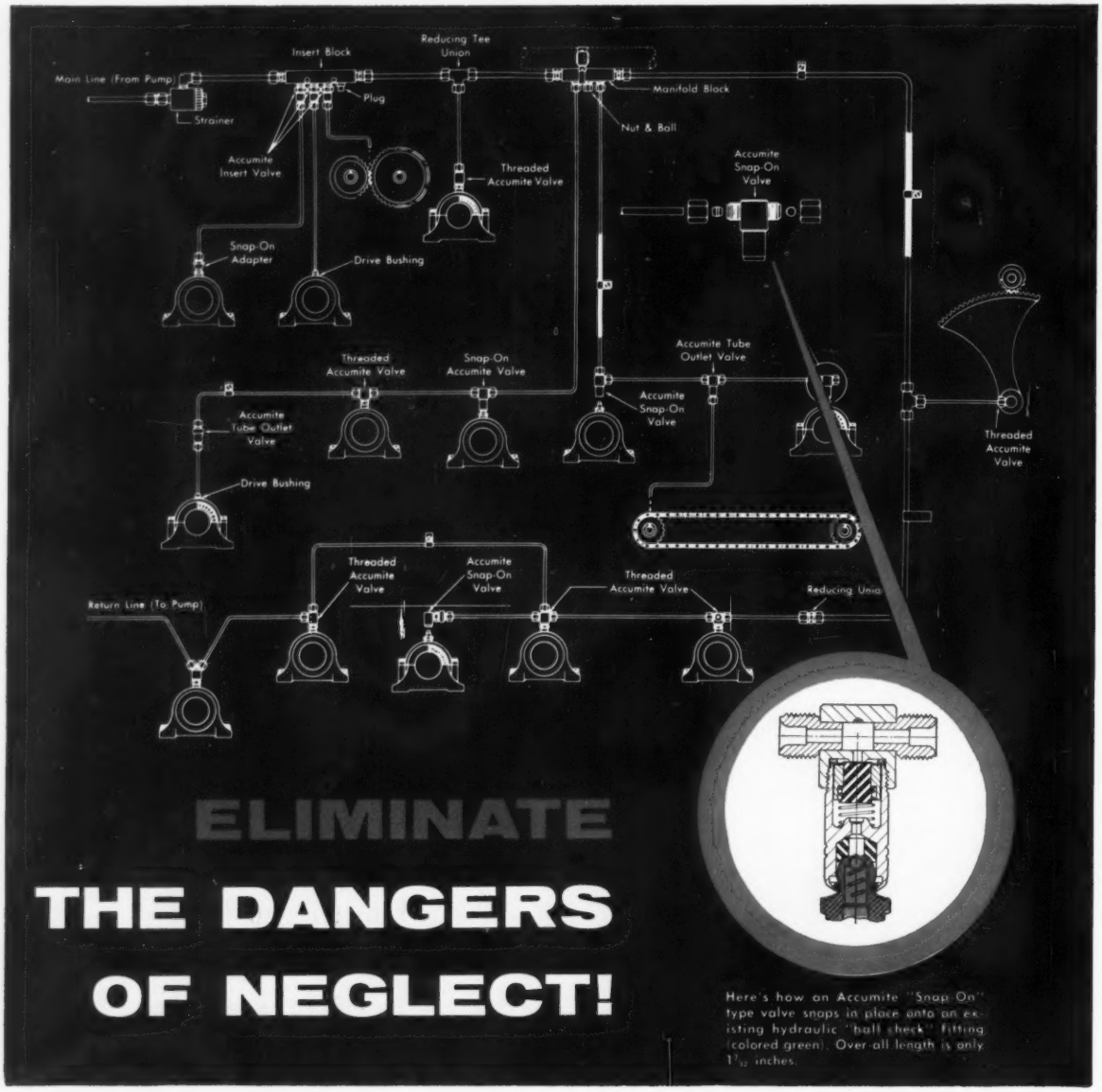
NAME_____

COMPANY_____

STREET_____

CITY & STATE_____

CIRCLE 109 ON READER SERVICE CARD



Alemite Accumite® Centralized Lubrication System avoids costly breakdowns, work-stoppage. Automatic positive lubrication protects all machines!

The Alemite Accumite® Centralized Lubrication System comes complete with pump, metering valves and controls. Meters exact amount of lubricant to all bearings whenever system is operated by air, vacuum or manually at any predetermined frequency.

There's no need for a lubrication shutdown. No chance of work spoilage or bearing failure due to over lubrication. The Alemite Accumite System accurately meters .003, .006 or .009 cu. in. shots of oil or grease automatically. Is available with adjustable fittings for applications requiring measured metering from .003 cu. in. to zero. "Snap-On" and "Screw-In" type valves make for complete flexibility in converting existing systems to automatic operation.

You are assured economical, trouble-free operation of equipment. All bearings are sealed against dirt, grit and water. You are able to eliminate the dangers of neglect because all bearings receive proper lubricant in one, automatic, safe operation!

For complete details on Alemite Accumite® Centralized Lubrication Systems for large or small, stationary and mobile equipment (Canning and Labeling Machines • Tractor Trailers and Lift Trucks • Farm Implements • Machine Tools • Textile Machines • Any Machine or Vehicle with Moving Parts) write for your *FREE* Alemite Accumite Catalog . . . today!

Symbol of SW Excellence

ALEMITE DIVISION
STEWART-WARNER CORPORATION
1850 Diversey Parkway, Chicago, Illinois

No Blockbusters–Yet!

FTC's long-awaited first installment on its "Economic Inquiry Into Food Marketing" doesn't set off any fireworks. But it does indicate that these might be forthcoming later on when a second report tackles purchasing patterns of chains and wholesalers.

The commission's curtain-raiser confines itself to mapping an impressive statistical picture of leading trends in the food industry. Some of these were pretty obvious –such as chains (of 11 stores or more) are siphoning off a greater share of store sales, and the individual retailer is finding it rough going unless he affiliates with a buying group.

Of special signficance to food manufacturers are the data on the chains' manufacturing activities–figures that have been hard to pin down up to now.

Shipments by chains from their own plants boomed 20% between '54 and '58. That's double the rate of gain reported for food and beverage firms by the U. S. Commerce Dept.

FTC notes that the larger chains are more likely to engage in making their own goods–because of the wider markets they serve. In order of importance, breadmaking, coffee processing, and meat packing account for the greatest volume of chain manufacturing.

Marketing Barometer: Sunny Skies

While U.S. industry in general has blamed rainy weather for the lackluster performance this year, food and beverage firms have enjoyed some pretty smooth sailing. Compared to a 4.3% gain in total retail sales for the first 4 mos. this year vs. '59, food stores sent their volume perking 5.7%, and eat and drink places registered a 5.3% gain. What makes this even more noteworthy is the fact that personal income (annual rate) showed a smaller 5.4% hike.

But the big news is in the all-important ledger books. Here, a check by FE of the first quarter statements of 30 food-beverage outfits shows a 6.0% jump in dollar volume, but a spanking 17.4% boom in net profits.

This handsome showing is even better than FE figured at the turn of the year, when a poll of industry leaders (see FE Jan. '60, p. 37) found chief executives looking for 5.5% more sales and 7.5% bigger profits.

How to Control Small-Order Costs

American companies are now finding solutions to the common, but costly, problem of filling small orders, a new National Industrial Conference Board report discloses. While many firms feel that the good will gained often outweighs the cost factor, others report the use of several cost-saving techniques.

Among those which have worked well: (1) Simplifying or bypassing certain stages of the order-processing routine, (2) price differentials that improve the profitability of small orders or act as incentives to the customer to increase his order size, (3) educating customers on the advantages of buying in larger volume, (4) channeling such business to distributors or jobbers, (5) setting small-order minimums.

Dining Out Profiled

Determined to make its brands as popular in the institutional field as they are in supermarkets, General Foods has underwritten an extensive survey of the eating-away-from-home trade. Carried out last January and February, the probe turned up these key points:

1) 43% of all Americans 18 or older ate out because of business or pleasure. Their expenditures, when projected, total more than $1 billion a month.

2) Dining out appeals more to the younger, higher income families. Favorable attitudes were shown by 82% of those less than 35 vs. 61% of those over 50; and by 84% with a family income of $8,000 or more vs. 62% with an income of $4,000 or less.

3) 62% feel restaurant prices are reasonable. Oddly enough, however, the most common reason given for not eating out more often is "Can't afford it" (cited by 37%).

Expansion by Franchise

Food firms wanting to penetrate new markets are turning to licensing arrangements as a means of keeping capital investment to a minimum. Two different approaches to the same problem were recently taken by Arnold Bakers and Quaker Oats.

National Sales Co. has been organized by Arnold to franchise bakers outside of the firm's regular distribution area to manufacture leading items of the parent company. While the new operation will concentrate on lining up arrangements with independent bakers, it will also include those accounts Arnold already works with on a non-exclusive basis.

A network of "Aunt Jemima's Kitchens" will soon be set up on a franchised basis by Quaker Oats. Independent operators will build and run the Kitchens under a licensing fee and royalty deal with QO, which first approves site location and method of operation.

BRIEFS

Instant tea sales, which have tripled in 5 yr., now represent 5% of total market.

Latest convert to the "marketing concept" is Standard Brands, which set up sales subsidiaries to handle all marketing functions for Grocery and Fleischmann Div.

"Better Meals" drive, sponsored by ANPA's Bureau or Advertising, is set for Sept. 12-24.

Buffeted by popular regional brands, premium price beers have seen their share-of-market slip from 26% in '52 to 20% in '58, Carling's Pres. Dowie reports.

New products are scheduled for '60 debuts by 90% of the candy makers polled by National Confectioners Assn.

Food sampling covers wider ground: Curtiss Candy kicked off its new powdered fruit drink with ½-oz. packets that were bound into regional editions of *TV Guide* magazine.

ANNOUNCING A NEW CORPORATE NAME

for The Garlock Packing Company

Garlock Inc. becomes the new name for The Garlock Packing Company, Palmyra, N. Y., to reflect more accurately its broad diversification of products and markets.

Originally established to manufacture mechanical packings, Garlock now produces over 2,000 different styles of packings, gaskets, seals, molded and extruded rubber and plastic products for every major industry.

The new corporate name, Garlock Inc., more closely identifies this 73-year-old company with the growth and development of its product lines. *Today, industry goes to Garlock for such widely diversified products as:*

- Hydraulic-Pneumatic Packings
- Oil and Grease Seals
- Gasketing and Expansion Joints
- Braided Packings
- Molded and Extruded Rubber Parts
- Plastic Stock Shapes and Fabricated Parts
- Mechanical Seals for Rotating Shafts
- Metal Packings
- Leather Packings
- Electronic Components
- Dry Bearing Materials
- Fluorocarbon Tank Linings
- Missile and Rocket Components

To help you in selecting or applying these products, Garlock offers the services of over 126 thoroughly-trained sales engineers, 175 electronic component manufacturers' representatives, 180 authorized bearing distributors and 69 foreign distributors. Conveniently located warehouses and stocking points assure Garlock customers of prompt delivery.

At Garlock Inc., design and development of new or improved products and materials is an ever-present objective. To this end Garlock maintains extensive research and laboratory-test facilities. In addition, Garlock engineers and chemists are always ready to work with you in seeking solutions to tough application problems.

GARLOCK

To find out more about "the new Garlock," call the nearest of our 26 sales offices, or write to Garlock Inc., Palmyra, N. Y. *To assure prompt attention,* please refer to *Garlock Inc.* on all future correspondence and orders.

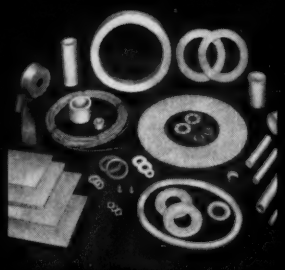
Canadian Div.: Garlock of Canada Ltd.

Order from the Garlock 2,000 . . . two thousand different styles of Packings, Gaskets, Seals, Molded and Extruded Rubber, Plastic Products.

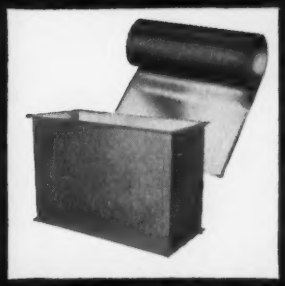
Hydraulic-Pneumatic Packings

Expansion Joints

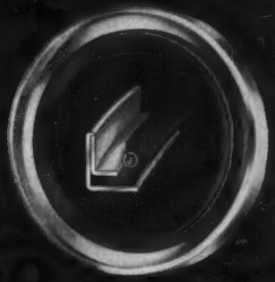
Molded and Extruded Rubber Parts



Plastic Stock Shapes
and Fabricated Parts

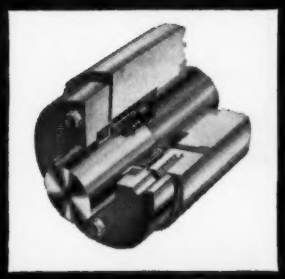


Fluorocarbon Tank Linings



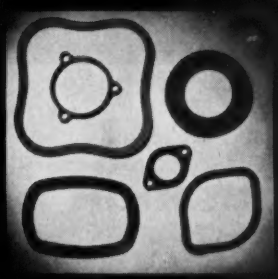
Oil and Grease Seals

Braided Packings



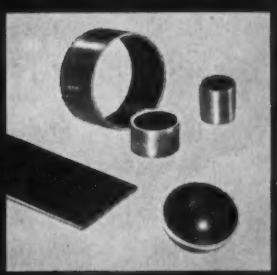
Mechanical Shaft Seals

Metal Packings



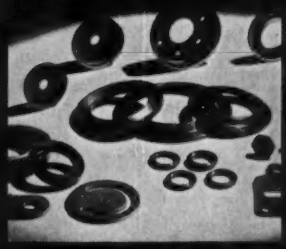
Gasketing

Spiral Wound Gaskets

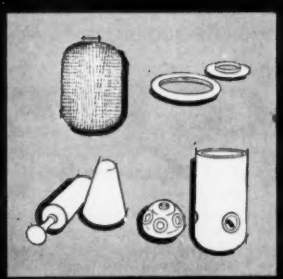


Dry Bearing Material

INC.

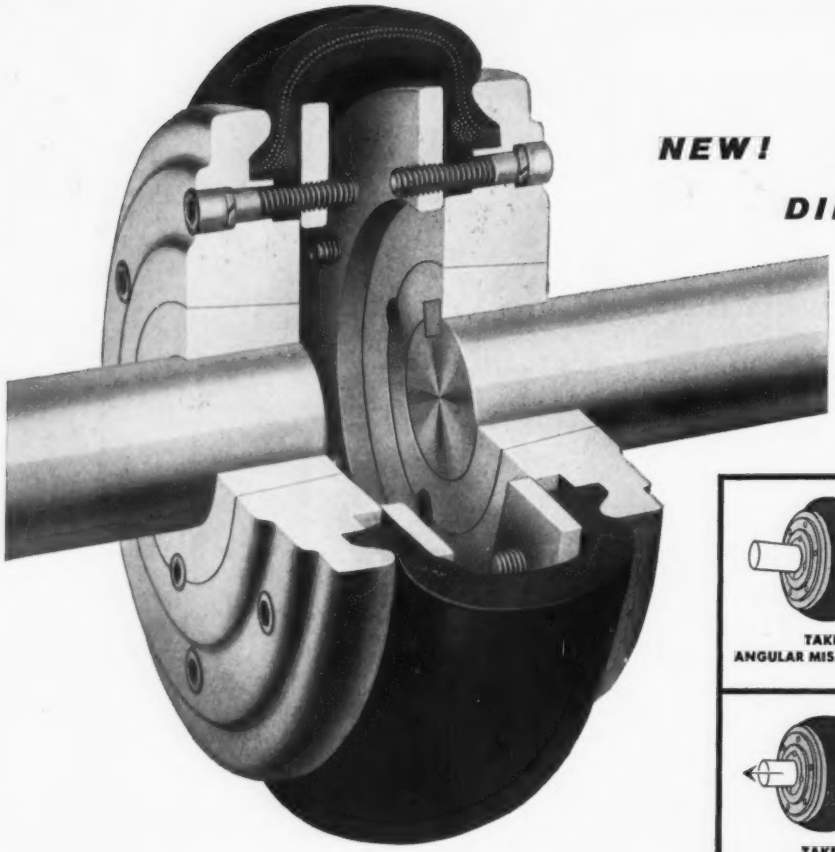


Leather Packings



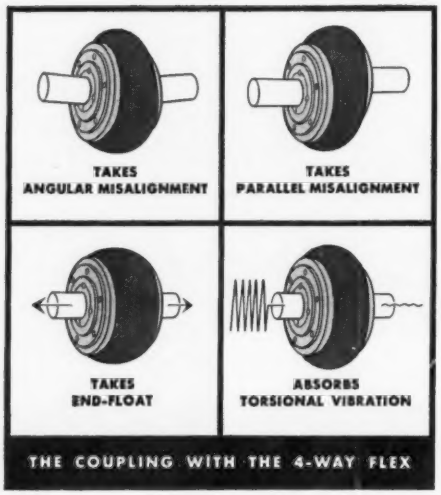
Missile and Rocket Components

Electronic Components



NEW!

DIFFERENT!



DODGE

Para-flex

FLEXIBLE CUSHION COUPLING

THIS coupling "swallows up" shaft misplacements. It automatically compensates for end-float, parallel misalignment, angular misalignment *or any combination of all three.* Moreover, it cushions the stresses of shock loads. And it absorbs torsional vibration—reducing noise and protecting machinery from vibration's destructive forces.

Here is a new type of performance—made possible by the development of a tire-like flexing element. Synthetic tension members, bonded together in rubber, give this element the stamina and dependability of modern, high-speed, high-load, shock-absorbing truck tires—and the ability to respond magically to all manner of changing shaft conditions.

Para-flex takes minimum space on the shaft. Mounting is simplified through the use of standard Taper-Lock bushings—no reboring, no machining. Safety is promoted by flush design; there are no protruding parts. No lubrication is required, no periodic inspection. And since the flexible member is molded with a transverse split, it can be replaced *without moving either the driver or driven machine.*

Para-flex Couplings are stocked by Dodge Distributors in popular transmission sizes. They are available from factory stock in capacities up to 2000 hp at 1080 rpm. Call your distributor for a coupling to *make your own test.* You'll witness something revolutionary!

DODGE MANUFACTURING CORPORATION, 2800 Union, Mishawaka, Ind.

DODGE

of Mishawaka, Ind.

CALL THE TRANSMISSIONEER — your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look under "Dodge Transmissioneer" in the *white* pages of your telephone directory, or in the yellow pages under "Power Transmission Machinery."

←CIRCLE 113 ON READER SERVICE CARD

CIRCLE 114 ON READER SERVICE CARD

MEN & COMPANIES

Summit Move at NBC . . . New board chairman at National Biscuit Co. is George H. Coppers, former president. Former Executive V.-P. Lee S. Bickmore takes over duties of president.

Mr. Coppers joined the company in 1920 as office boy, moving up the executive ladder to presidency in 1945 at age 42. Mr. Bickmore joined NBC as a salesman in 1933, later serving in a number of sales capacities. He was named sr. v.-p. in 1957 and executive v.-p. last year.

Lee S. Bickmore

George H. Coppers

Both leaders can look with pride on first quarter sales and earnings, highest for any first three months in firm's history. Net sales of $111.7 million were 10% ahead of last year's figure. Net earnings increased 30% to $6,760,853. (Bachrach Photos)

Standard Brands Switch . . . Henry Weigl, former executive v.-p., has been elected president of Standard Brands Inc, succeeding Joel S. Mitchell, who moves up to board chairman and chief executive officer. Albert A. Ricker takes over duties as executive v.-p.

At stockholders' meeting, firm also reported first quarter earnings of $4,364,368 on sales of $135,265,868, largest of any quarter in Standard Brands history. Better profit margins have resulted from cost control, improved facilities and processes, and stepped up production efficiency.

Henry Weigl

Shareholders were told capital expenditures for '60 will be at about level of last year's depreciation and other non-cash charges, which totaled $8,200,000. (Blackstone Photos)

Joel S. Mitchell

Personnel

James H. Allen and **Lyman C. Dunbar,** marketing executives at California Packing Corp., have been named board members.

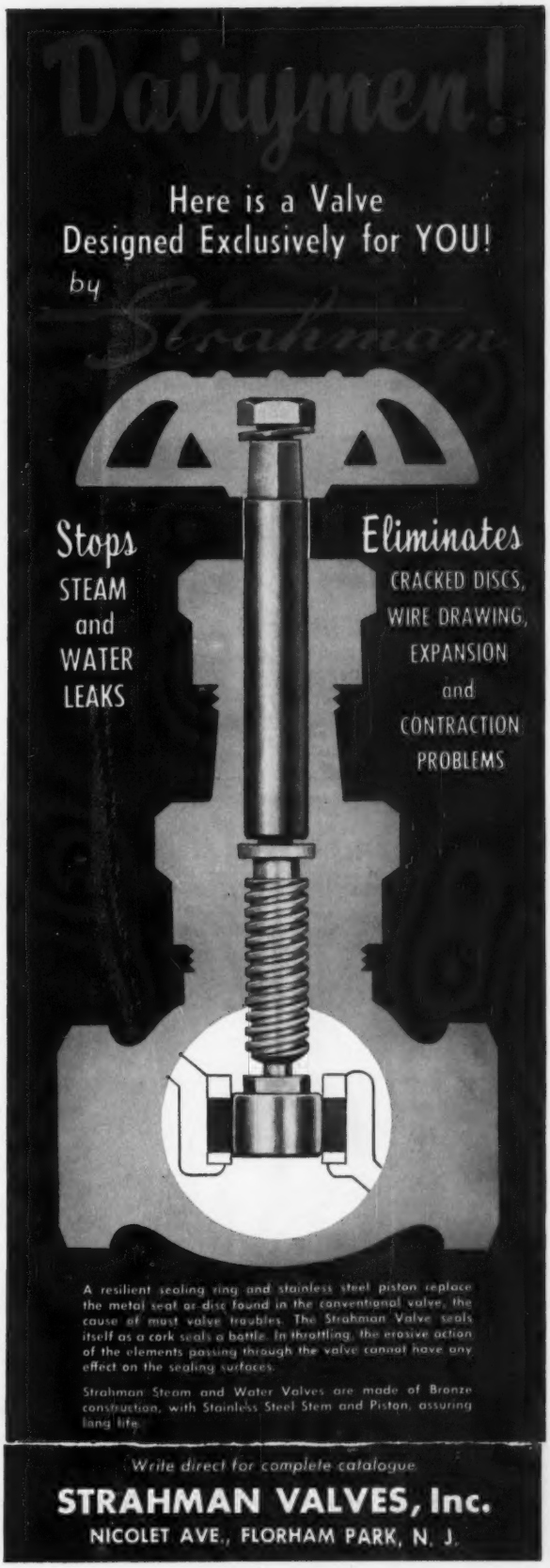
George W. Alijan is retiring as v.-p. of California & Hawaiian Sugar Refining Corp.

Frank Armour Jr., H. J. Heinz Co. president, is recipient of coveted '60 Horatio Alger award. Mr. Armour began his Heinz career as a factory guide 32 yr. ago.

George E. Bredt, Carling Brewing Co., Cleveland, is now president of American Society of Brewing Chemists.

John C. Brown, George S. Cobb, and **William S. Judkins** have been elected presidents of, respectively, the Coca Cola Bottling Co. of California, Chicago, and Ohio.

J. Paul Bryant, sales v.-p. of Standard Brands Inc., as-


Dairymen!
Here is a Valve
Designed Exclusively for YOU!
by
Strahman
Stops
STEAM
and
WATER
LEAKS
Eliminates
CRACKED DISCS,
WIRE DRAWING,
EXPANSION
and
CONTRACTION
PROBLEMS
A resilient sealing ring and stainless steel piston replace the metal seat or disc found in the conventional valve, the cause of most valve troubles. The Strahman Valve seals itself as a cork seals a bottle. In throttling, the erosive action of the elements passing through the valve cannot have any effect on the sealing surfaces.
Strahman Steam and Water Valves are made of Bronze construction, with Stainless Steel Stem and Piston, assuring long life.
Write direct for complete catalogue
STRAHMAN VALVES, Inc.
NICOLET AVE., FLORHAM PARK, N. J.

CIRCLE 115 ON READER SERVICE CARD 115

sumes presidency of Standard Brands Sales Co., newly-created subsidiary corporation handling marketing of Grocery and Fleischmann Sales Divisions. Named v.-p.'s are **Philip I. Eisenmenger, Harry W. Green, James E. Marler, Frank X. Ragan,** and **Mercer G. Rhodes.**

Herbert M. Cleaves and **C. W. Cook** are new board directors at General Foods Corp. **Allen Wagner** was elected public relations v.-p.

Franklin M. Depew is new president of the Food Law Institute, according to announcement by **William T. Brady,** Corn Products Co. president and FLI board chairman.

John H. Ehrenfeld, manager of canned meat division at Libby, McNeill & Libby, is new president of National Meat Canners Assn.

Dr. James W. Evans, research v.-p. at American Maize-Products Co., Roby, Ind., is president-elect of American Assn. of Cereal Chemists.

J. L. Heid, '49 Food Engineering Award winner for frozen concentrate process, has been appointed R&D manager of Tri-Valley Packing Assn., San Francisco.

David L. Ladd has been named director of newly-created New Products Div. at Minute Maid Corp. Duties include label design and evaluation of market testing and research.

Chartes V. Lipps is new president and chief executive officer of Curtiss Candy Co., succeeding **William C. Jakes.**

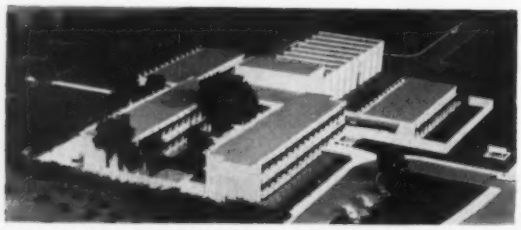
L. W. Majer, Hershey Chocolate Co., is new president of Chocolate Manufacturers Assn., of U. S. A.

Louis Ratzesberger, former president of The Illinois Canning Co., joins Dole Hawaiian Pineapple Co. as v.-p. and chief administrative officer of firm's Mainland activities.

Edwin W. Rawlings moves up at General Mills, relinquishing financial v.-p. post to become executive v.-p. in charge of finance and consumer activities.

Dr. Harold W. Schultz, head of Dept. of Food & Dairy Technology at Oregon State College, is president-elect of IFT. Group has also named **Dr. J. R. Vickery,** of Australia, as '60 International Award winner for research in preservation and processing of meat, fish, eggs, fruits, and vegetables.

Dr. C. O. Willits has received USDA's Superior Service Award for maple syrup research.



NEW BAKERY RESEARCH LAB, completed by Capital City Products Co., Columbus, Ohio, contains separate controlled temperature rooms and latest equipment in gas and electric automatic ovens, deep fat fryers, dough retarders, proof boxes, etc.

Industry

Borden Co. has acquired the **Brandywine Mushroom Corp.,** West Chester, Pa., major grower and processor of cultivated mushrooms.

Firmenich, Inc., has completed 100% expansion of its Plainsboro, N. J., Lab Division.

Harvard School of Public Health has broken ground for construction of a new Nutrition Research Building in Boston. Gifts of over $1 million from General Foods Corp. and $529,000 from National Institute of Health Research

ClarkeAmatic PAID FOR ITSELF — PAID OPERATORS'

The Philadelphia plant of SKF Industries, Inc. — leading manufacturer of ball and roller bearings, had a particularly tough cleaning problem — BEFORE using the Clarke-A-matic self-propelled floor maintainer. Seven men with hand equipment scrubbed 13,500 sq. ft. of production floor area nightly in order to cover the entire factory once every two weeks. Besides the usual dirt, the floor was liberally splattered with oil, coolant and grease. And these seven men, with their hand cleaning equipment, did a barely adequate job.

Now, the same operation is accomplished with *only two* men — and a bonus value is gained in cleaner, skid-free floors. What made the difference? The Clarke-A-matic floor maintainer. The savings that resulted from using two men instead of seven paid for the Clarke-A-matic, paid the wages of the Clarke-A-matic operator and one other man, and saved SKF an additional $7,000. All this in the first year of operation!

THE BEST KNOWN NAME IN FLOOR MACHINES

Clarke
FLOOR MACHINE COMPANY

816 E. Clay Avenue, Muskegon, Michigan

POWER SWEEPER | RUG SHAMPOOER | WET-DRY VACUUM | FLOOR MAINTAINER | CLARKE-A-MATIC

Authorized Sales Representatives and Service Branches in Principal Cities
Distributed in Canada: G.H. Wood & Co. Limited, Box 34, Toronto 18, Ont.

Facilities Branch (USDHEW) have made the new structure possible.

Pacific Hawaiian Products Co. has opened a new $750,000 fruit drink processing plant in Fullerton, Calif.

Pet Milk Co., Ltd., Canada, has purchased the **Old Cherry Hill Cheese House,** leading distributor of quality cheeses in Canada.

Stokely-Van Camp, Inc., Indianapolis, has acquired controlling stock interest in Kuner-Empson Co., Brighton, Colo., canning firm.

Associated Industries

American Chemical Society has presented the '59 Paul-Lewis Award in Enzyme Chemistry to Dr. Arthur B. Pardee, U. of California.

Celanese Corp. of America has named Kenneth C. Loughlin president, succeeding Harold Blancke.

American Marketing Assn. has elected Albert W. Frey, well-known author, educator, and consultant, as president.

Dodge & Olcott, Inc., N.Y.C. ingredient producer, has presented a $1,000 scholarship award to E. Weiss, M.I.T.

General American Transportation Corp.'s new president is T. M. Thompson. He succeeds W. J. Stebler, who remains board member.

Ford Foundation has provided a $6.9 million grant for establishment of the International Rice Research Institute in the Philippines.

Union Carbide Chemicals Co. is operating a new Technical Service Lab in Tarrytown, N. Y. Lab, containing a food technology department, is designed to aid customers in development and improvement of customers' products.

Roslyn Willett Associates is new N.Y.C. PR firm (441 West End Ave.) specializing in institutional food spheres. Mrs. Willett has been a chief editor of diner and inplant-food publications, and earlier served as an editorial staff member of FE.

CUT
TOMATO TRIMMING COSTS!

Remarkable NEW Automatic Tomato Trimmer

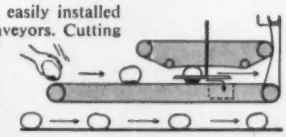
● **Cuts trimming costs more than half!** No hand trimming needed . . . you save up to 75% in labor costs.

● **Boosts production** . . . automatic trimming increases output many tons per hour.

● **Eliminates unnecessary product waste** . . . automatic trimmer pays for itself many times over.

● **Trims out black spots automatically.**

Tomato trimmer is easily installed on any existing conveyors. Cutting parts are made of stainless steel . . . the trimmer is easy to clean . . . easy to maintain.



Want more Details? Specifications? Prices? write:

F. H. LANGSENKAMP CO.
227 E. SOUTH ST. • INDIANAPOLIS 25, INDIANA

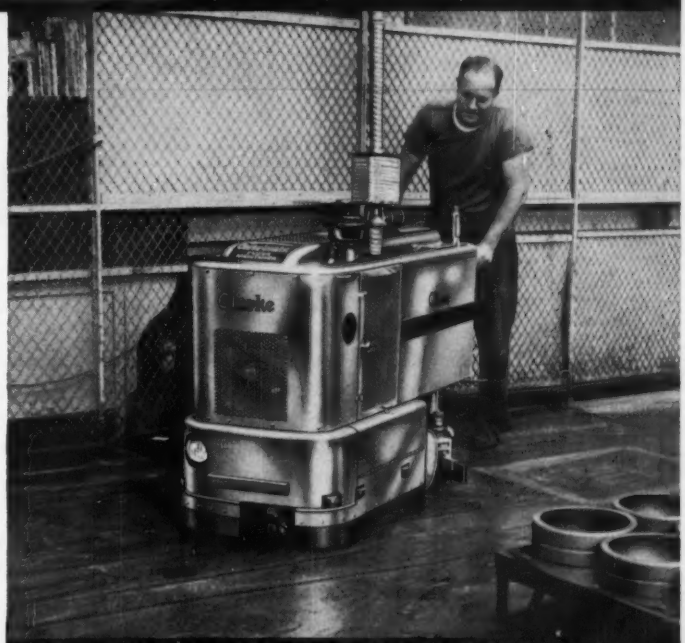
CIRCLE 226 ON READER SERVICE CARD

WAGES — SAVED $7,000 MORE THE FIRST YEAR

The secret of this machine and why it wins the maintenance battle is the way it automatically performs four separate cleaning operations *every time* it passes over the floor. It meters solution, scrubs thoroughly, picks up dirt and solution, and squeegee-dries — leaving floor sparkling clean! Its self-propelled movement and 31-inch turning radius reduce the operator's job considerably, too.

For safer in-plant use, a catalytic exhaust purifier unit — a standard Clarke-A-matic accessory made by Oxy-Catalyst, Inc. — was installed to effectively reduce hydrocarbons, odors and carbon monoxide.

So why don't *you* clean better, faster —at lower cost—with Clarke? There's a correct size and type of Clarke maintenance machine for every floor area in any institutional, commercial or industrial building. Ask your Clarke distributor for a personal demonstration on *YOUR* premises.



A gasoline engine powered Clarke-A-matic cleaning plant floor of SKF Industries, Inc. in Philadelphia, Pa. Clarke-A-matic also available with battery, electric or propane power.

CIRCLE 117 ON READER SERVICE CARD

VERTICAL FULL-CURL FLANGE. This popular container is ideal for frozen foods and bakery products. Full-curl rim makes fast, tight covering possible. Manual or automatic closure equipment is available from Ekco-Alcoa on a sale or rental basis.

SMOOTHFOIL. The first rigid foil container to offer a true hermetic seal. Keeps moisture-sensitive items with complete safety. It is available in natural aluminum or a wide range of colors.

RIBFOIL. An entrancing new foil package, both in the store and on the table. Fluted sidewalls add strength and beauty. Brilliant colors are economical to apply. Available with bowed or vertical sidewalls.

SPECIALTY CONTAINERS. Unusual shapes for special needs. The heart container shown here is only one of many intriguing shapes Ekco-Alcoa has created.

Why foil packaging?

Rigid aluminum foil packaging is selling product after product. Few packaging shapes are beyond its reach. Foil wears a variety of colors with unique brilliance, compliments printing and embossing.

Light, strong, moisture-proof, odorless, tasteless, non-toxic, dimensionally stable—these inherent foil characteristics insure full protection. You can safely freeze in foil. And your customers can cook and serve in the same aluminum package.

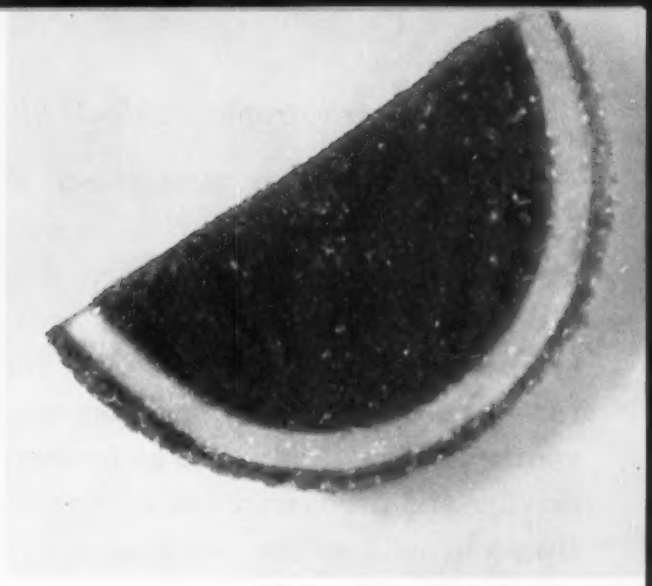
Production advantages are numerous. Easy stacking, for instance. And easy filling and closing with manual or automatic closure equipment, which is readily available on a sale or rental basis from Ekco-Alcoa. From every standpoint, rigid aluminum foil is a versatile packaging material.

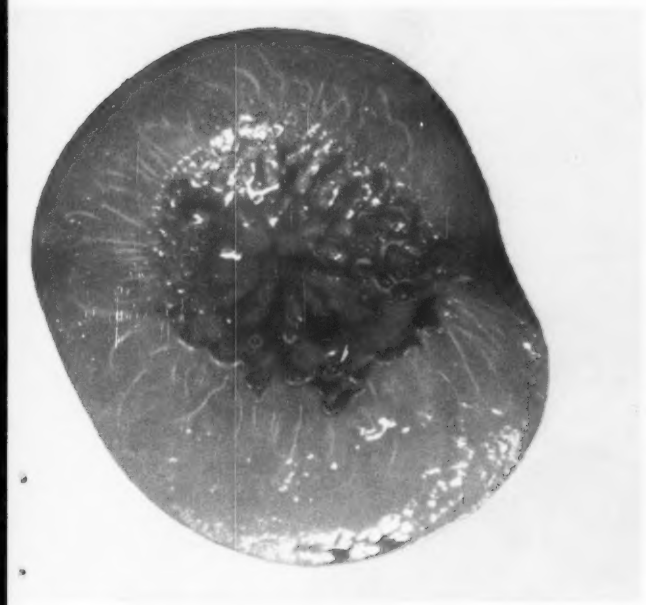
The Plus Container

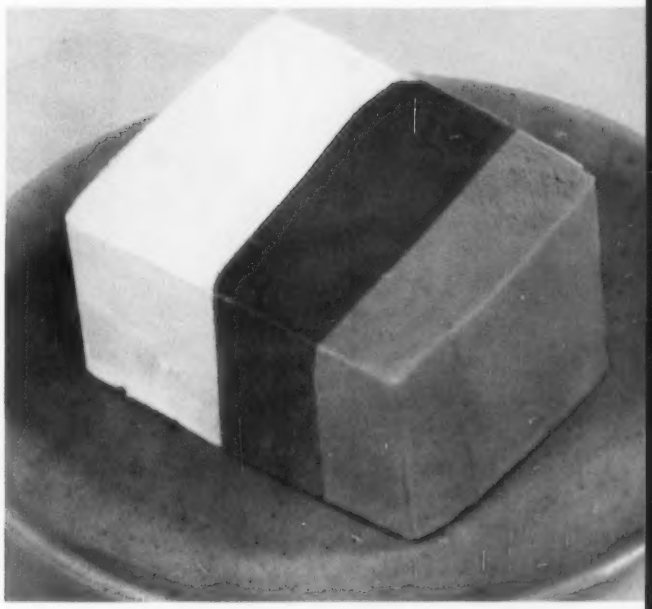
EKCO-ALCOA CONTAINERS INC.

WHEELING, ILLINOIS · WHITTIER, CALIFORNIA · LONG ISLAND CITY, NEW YORK

EKCO is the registered trademark of Ekco Products Company. ALCOA is the registered trademark of Aluminum Company of America. The corporate name and combination mark, EKCO-ALCOA, is used under license to the manufacturer by each of these companies.







Flavorful, quality, eye-appealing foods...

naturally superior...when made with...

sugars, starches and syrups from

CORN PRODUCTS

WRITE OR PHONE *Corn Products for expert technical assistance... helpful data on these fine products for the Food Industry:*

CERELOSE® dextrose sugar · REX® and GLOBE® corn syrups · BUFFALO® · HUDSON RIVER® and SNOWFLAKE® starches.

CORN PRODUCTS DIVISION CORN PRODUCTS SALES COMPANY · 9 East 55 Street, New York 22, N. Y.

Last year, traffic accidents killed 37,000, injured 1,400,000

. . . and they wasted Five Billion Dollars!

Traffic accidents' human toll is so tragic we sometimes overlook their staggering economic waste. Five Billion Dollars in lost wages, medical expenses, insurance costs and property damage! Your business—every business—shares in this loss. So you have a double interest in helping reduce traffic accidents. And you *can* help! Drive safely and obey the law yourself . . . certainly. But go further. Use your influence to promote safe driving and urge strict law enforcement. To make your efforts more effective, join with others working actively to reduce traffic hazards in your community. *Support your local Safety Council!*

Where traffic laws are strictly enforced, deaths go DOWN!

Published in an effort to save lives, in cooperation with the National Safety Council and The Advertising Council.

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Classified ..... p. 152
Advertisers' Index ..... p. 156
Reader Service ..... Back of Book

NEW EQUIPMENT & SUPPLIES

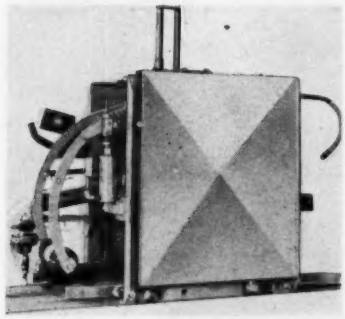
Cuts Recirculation Costs

New tubular heating-fluid medium has built-in channels to simplify and reduce recirculation, thus cutting piping-system costs.

One-piece, extruded Duotrace section contains two integral channels flanking a large, product-carrying pipe area. Heating fluid travels through small oval passageway, maintaining temperature of bulk material in line to insure free flow. At terminal, fluid is reheated, if necessary, prior to being returned through second channel.

Product was designed to eliminate extra piping and is available in 2, 3, and 4-in. sizes.—*Alcoa, 1501 Alcoa Bldg., Pittsburgh 19.*

Circle 300 on Reader Service Card



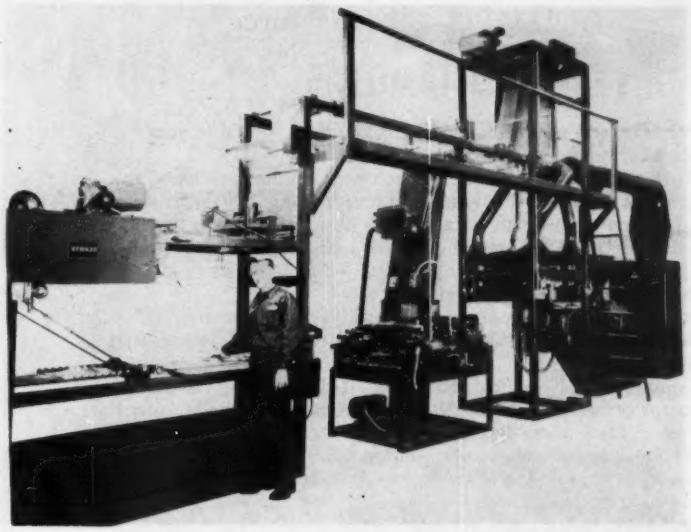
Speeds Non-Seal Cartons

Automatic unit closes flaps and turns over cartons that must be left unsealed for re-use in later operations.

Requiring no operator, machine can be installed on any new or existing conveyor lines. It is designed to handle any size carton from 8x8x3¼-in. up to 24x18x16-in. and any carton weight from 3 to 60 lb. Speeds run to 10/min.

Compact unit operates electrically and on compressed air.—*Lathrop Paulson Co., 2459 W. 48th St., Chicago 32.*

Circle 301 on Reader Service Card



Continuous Flow System Makes 120 Plastic Bags/Min.

Complete, integrated system starts with resin granules and delivers finished printed plastic bags in one straight-line, continuous-flow operation.

System makes bags at low overall cost and gives user complete control over inventories and production schedules. Only resin raw material needs to be stocked, eliminating need for purchasing and warehousing a large number of different film thicknesses.

In this "Bag-Line" operation, film thickness, bag width and length, and printing copy are quickly changed. Clutch and brake arrangement assures accurate control over bag length and position of printed copy.

Unit makes bags to 21-in. wide and 24-in. long, and up to 4 mils. in thickness. Bags may be printed in 1 to 4 colors, with or without vent holes, at rates to 120/min.

In operation, extruder produces a hollow tube which is inflated and stretched to proper thickness, and cooled in tower. Final section measures, seals, cuts, and stacks finished bags.—*F. J. Stokes Corp., 5500 Tabor Rd., Philadelphia 20.*

Circle 302 on Reader Service Card

Sanitized Conveyor Belt

Designed especially for food processors, easily sanitized conveyor belt features collapsible principle for facile and more thorough cleaning during operation or downtime.

Feature is accomplished by welding ends of individual spirals and connecting rods 'back onto themselves'.

Construction allows each component part of belt to separate completely when belt is slack, permitting bacteria particles to be quickly flushed away.—*The Cambridge Wire Cloth Co., Cambridge, Md.*

Circle 303 on Reader Service Card

Want more information on any items? Just circle the key numbers on Reader Service Card, back of book

YOUR CHICKEN DINNER AND FRICK REFRIGERATION

• From the farm to your fork, the chicken that's served to your family has been kept fresh by refrigeration.

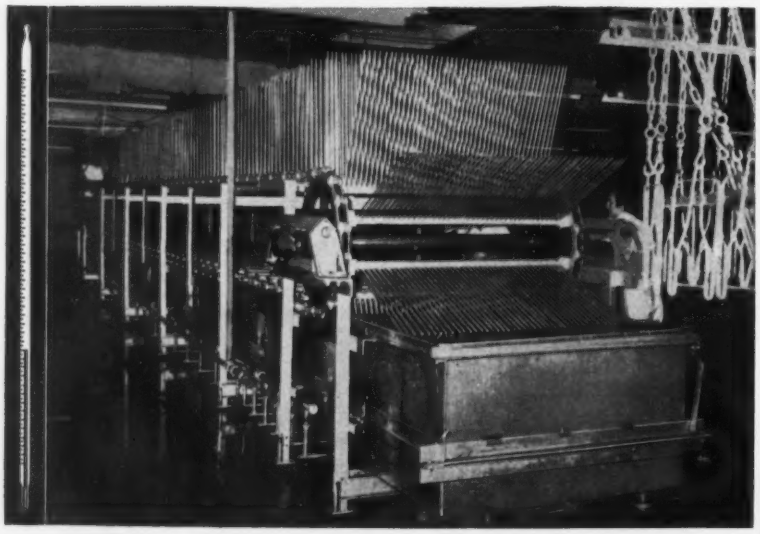
The Frick Company, pioneers in refrigeration, has developed an economical process that is years ahead of other methods of chilling freshly killed birds. Using a continuous flow of cold water instead of costly ice, the Frick system cools the birds to 36 or 37 degrees—not just the minimum requirement of 40—thereby preserving freshness and locking in flavor.

Frick's ability to design and install quality refrigeration for processing, packaging and storing foods of *all* types is recognized by engineers throughout the world.

No matter what *your* refrigeration or air conditioning problem is . . . for beans or beer, poultry or peaches, pharmaceuticals or farm-fresh apples . . . Frick offers depend*ability*.

If your business requires refrigeration or air conditioning in *any* phase of its operation, a Frick engineer will be happy to discuss it with you at no obligation.

FRICK COMPANY, Waynesboro, Pennsylvania

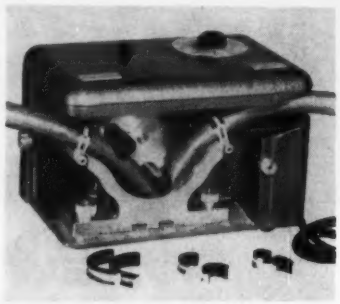


• Here's a Frick Counter-Flow-Continuous ("C-F-C") Poultry Chiller, one of four in operation at Holly Farms Poultry Processing Plant, Wilkesboro, North Carolina.

The continuous flow of water passes through only once, with no recirculation, and the chiller operates continuously instead of in batches.

Savings up to ¼c per pound are realized by using the Frick "C-F-C" chiller when compared to the use of ice. Figure the money saved at Holly Farms, which processes 9,600 birds an hour, using Frick refrigeration equipment exclusively.

Equipment & Supplies



Flexible Flow Inducer

Volume speeds of a few cc./min. to nearly 500-gal./hr. is possible with this self-priming flow induction pump for liquids, slurries, emulsions, dried powder, etc.

Unit accommodates up to 1-in. hoses employing a flexible hose on a multi-curved track. Motor is variable to 200 rpm., and reversible switch with positive lock safety permits flow in either direction.

Reducer can be run dry and can be used for dosing or metering.—*Schueler & Co., 75 Cliff St., N.Y.C. 38.* **Circle 304 on Reader Service Card**

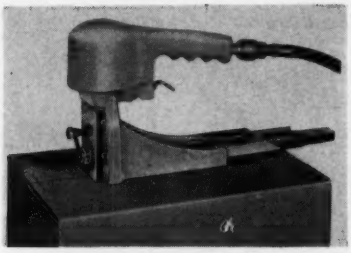
Bends Metal Fittings Fast

Precision bending of sheet metal and wire into virtually any shape or form is possible with this powerful portable bender.

Tool exerts up to 200-lb. pressure to form metal against angle and curve dies, and has interchangeable angle and radii dies.

Unit shapes sheet metal up to ⅛-in. thick and 1¼-in. wide in any length. Hand-held or clamped in vise, it works equally well on cold rolled steel, aluminum, brass, copper, and wire.—*The Hahn Co., 2311 Fox Hills Dr., Los Angeles 64.*

Circle 305 on Reader Service Card



Portable Carton Stapler

Redesigned, air-operated Air Boxer stapling machine features cycle-through air system utilizing an all-aluminum body shell and cylinder housing.

Total weight is 6½-lb., and magazine holds 100 staples. Portable unit has exclusive full floating, quickly removable channel to minimize jamming.

Accurate, quickly set controls regulate both staple penetration and tightness of clinch, and assure damage-free carton closing after cartons are filled.—*International Staple & Machine Co., Herrin, Ill.*

Circle 306 on Reader Service Card

Simpler Record 'Spectro'

Offered for streamlined operations, with accommodation of low-cost accessories, new Spectronic "505" UV-visible recording spectrophotometer makes permanent records of absorption of any solid, liquid, or gas.

Versatile instrument quickly pinpoints light-analyzed material properties, rapidly determines qualitative and quantitative data on many substances, and speeds color matching and specification.

Included are automatic wavelength speed control, external dual lamphouse, air-cooled hydrogen lamp, built-in wavelength calibration, large sample compartment, and special monochromator.

Among features is handy front sample compartment with drain for ready removal of any spilled samples. —*Bausch & Lomb Optical Co., Rochester 2, N. Y.*

Circle 307 on Reader Service Card

DAY

Pneumatic Conveying & Bulk Storage News

FREE! 2 valuable guides for selecting PNEUMATIC CONVEYING and BULK STORAGE TANKS

BULLETIN M-588—12 page DAY pneumatic conveying guide just off the press. Discusses types of systems, illustrates and diagrams high and low density arrangements, shows equipment and tells "why" and "wherefore" of all types of pneumatic conveying including so-called fluidizing systems.

BULLETIN 574—12 pages, describes horizontal and vertical storage tanks. Points out savings and is filled with photos of various installations plus description of auxiliary equipment.

Whatever your pneumatic conveying or bulk storage problem, look first in these DAY bulletins. They are valuable aids in selecting and ordering the right equipment for your plant. For your free copies use reader service card of this magazine or write direct toDAY.

The **DAY** *Company*

SOLD in UNITED STATES by
The DAY SALES Company
817 Third Avenue N.E.
Minneapolis 13, Minnesota

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The DAY Company of Canada Limited
Rexdale (Toronto), Ontario, Canada
Ft. William, Ontario, Canada

Representatives in Principal Cities

EQUIPMENT ONLY OR A COMPLETE SYSTEM

Another in a series of Hoerner
Corrugated Shipping
Container Experts

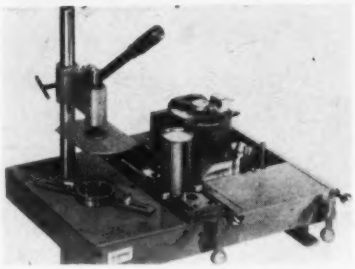
THIS IS THE HOERNER SPECIALIST FOR PACKAGING SHINY THINGS

Things with highly polished surfaces take tender care in shipping. The slightest scratch can mar their value. Hoerner experts aren't blind to the problems. They build boxes with specially surfaced pads and partitions that protect the shiniest products from even a smudge. If your shipping operation is reflecting too much loss, call the plant nearest you for a Hoerner expert.

HOERNER BOXES, INC.
Corrugated Specialists for Mid-America

GENERAL OFFICES: 600 Morgan Street, Keokuk, Iowa • PLANTS: Fort Smith and Little Rock, Ark.; Des Moines, Keokuk and Ottumwa, Iowa; Danville, Illinois; Minneapolis, Minn.; Tupelo, Miss.; Springfield, Missouri; Sand Springs, Okla.; Sioux Falls, South Dakota; Fort Worth and Mission, Texas • ASSOCIATE: Cajas y Empaques Impermeables, S.A., Mexico City D.F., Mexico

Equipment & Supplies



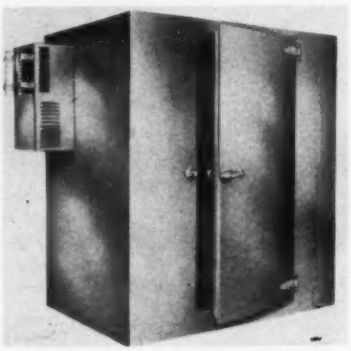
Speedy Can-Seam Checker

Up to 6 cans/min. of any size may be opened and inspected with this self-contained seam tester that plugs into any 110v. outlet.

Unit employs a precision rotary saw for easy lid removal. Seams are cross-cut for checking, and strips can cover body hook for measuring and accurate inspection of sealing performance.

Tester is 28-in. long, 25-in. wide, and 13-in. high, weighing approximately 100-lb.—*Hi-Speed Checkweigher Co., Inc., 605 W. State St., Ithaca, N. Y.*

Circle 308 on Reader Service Card



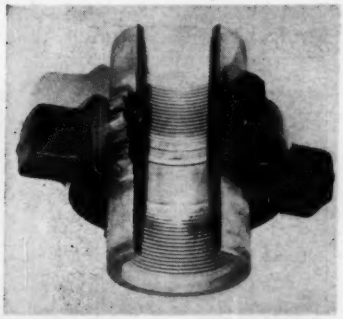
Compact Walk-In Coolers

New "Coolerette" line is designed to meet requirements of manufacturers whose refrigeration needs do not justify installation of large room, but require bulk storage space.

Model CV-90 has outside dimensions of 62x48x72 in. with capacity of 90 cu. ft. Weather-resistant and completely sanitary, unit has evaporator coil and is fan-engineered for most efficient operation.

Suggest uses: As receiving room for off-hours delivery of dairy and other food products, as storage of drive-in milk and ice cream, and as extra storage area for regular refrigerated unit users.—*Jordan Commercial Refrigerator Co., 2200 Kennedy St., Philadelphia 37.*

Circle 309 on Reader Service Card



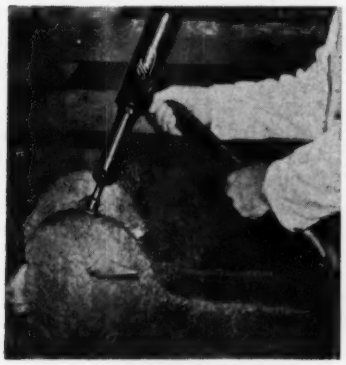
Hi-Pressure Pipe Unions

Fast and simple installation and maintenance of pipeline systems is permitted with these 4,000 and 6,000-lb. working-pressure unions.

Unions have a full three-pitch acme thread, which turns easily, resists clogging by foreign matter, and is quickly cleaned. Combination seat, both rubber-to-metal and metal-to-metal, insures long trouble-free life in high pressure applications.

Fast make-and-break feature fits processors' needs for frequent pipeline disassembly.—*Clayton Mark & Co., 1900 Dempster St., Evanston, Ill.*

Circle 310 on Reader Service Card



Efficient Sheep Stunner

Air-powered, captive-bolt SG-1 stunner for humane slaughter of lambs and sheep requires no cartridges or loading. Special feature is that it is activated by contact with animal's head.

Stunner utilizes percussion-type mushroom head and has 17-in. main cylinder with 18-in. projecting handle.

Tests show unit is capable of stunning 300 sheep/hr., with air pressure adjustable to assure one-blow operation of largest animals.

Contact activation and virtually recoilless action provide high accuracy.—*Thor Power Tool Co., 175 N. State St., Aurora, Ill.*

Circle 311 on Reader Service Card

For the

Cleanest, Most Effective Insect Control

Fog with

DYNA-FOG

TRADE-MARK

Insecticide Applicators

Check these important points which Dyna-Fog equipment gives with your present method of insect control:

- Only clean-up necessary is exterminated insects.
- Penetrates remote areas where insects hide and breed.
- All equipment is fully guaranteed for one year.
- Dyna-Fog has the only full line of fogging equipment—the leader in the field.

Curtis AUTOMOTIVE DEVICES, INC.

P.O. Box 297-12 Westfield, Indiana

CIRCLE 227 ON READER SERVICE CARD

THE Rotor Lift SCREW ELEVATOR--

Industry's "Horn of Plenty" In Materials Handling!

PARTIAL LIST OF MATERIALS ELEVATED:

Alfalfa meal
Apple pomace
Baking powder
Barley
Beans, all small field
Bicarbonate of soda
Blood, dried
Bone, crushed
Bonemeal
Bran
Bread crumbs
Brewer's grain
Buckwheat
Caffeine
Cereals
Cocoa beans
Coconut, shredded
Coffee
Copra
Corn, grits
Cornmeal
Corn oil cake and meal
Corn, shelled
Cottonseed
Cottonseed cake cracked
Cottonseed meal
Cottonseed meats
Cracklings, pulverized
Dairy feeds
Egg powder
Feedstuffs
Fish meal
Flour
Gelatin, granulated
Grains, all small field
Grains, distillery spent dry
Grape pomace
Hops
Ice, crushed and tube
Kaffir
Maize
Malt
Meat scraps
Mixed feeds
Oats
Orange peel, dry
Peanut cake and meal
Peanut shells
Peanuts, shelled
Peas, dried
Rendering plant products
Rice
Rye
Safflower seed
Salt
Sesame seed
Soybean cake and meal
Soybean flakes
Soybean flour
Soybeans, cracked
Soybeans, whole
Spices
Starch
Sugarbeet pulp
Sugar, granulated
Sugar, powdered
Tankage
Wheat
Wheat bran
Wheat flour

SOUTHWESTERN SUPPLY AND MACHINE WORKS

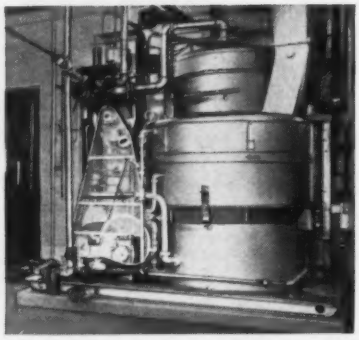
OKLAHOMA CITY, OKLAHOMA

8 BASIC TYPES
4 DIAMETERS

WORLD'S LARGEST MANUFACTURER OF VERTICAL HELICOID SCREW ELEVATORS

3 BOILERS IN 1 COMPACT PACKAGE!

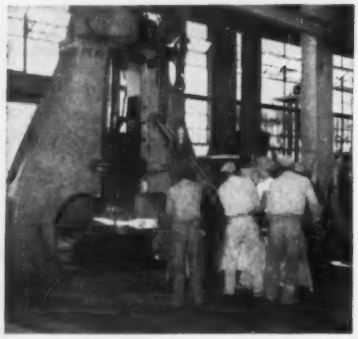
FOR ORDINARY STEAM REQUIREMENTS: The cycle-type Modulātic standard unit furnishes 90% dry steam for most ordinary needs such as cooking, heating water, drying, cleaning, etc.



WHERE DRY STEAM IS REQUIRED: The Modulātic may be used with an optional steam separator, for over 99% dry steam for heating, moulding, forges, operation of power equipment, etc.

VAPOR MODULĀTIC WATER TUBE BOILERS

¼ the size and weight of conventional boilers... largest size (150 BHP) uses only 5′ x 8′ space.



IF CONSTANT STEAM LOAD MUST BE MAINTAINED: For applications where even a nominal drop in pressure cannot be allowed, an optional steam reservoir may be added to the standard unit to provide a "cushion" during an off cycle.

Efficient . . . economical . . . proved in thousands of installations all over the world! Vapor Modulātics furnish high or low-pressure steam (at design pressures up to 1000 psi, or even higher). Lowest installation costs—delivered completely assembled, wired and tested . . . all sizes (40 to 150 BHP) fit through plant doors, with no special foundations or special chimneys needed. Simple push-button operation; built-in safety controls. May be mounted in multiple units to provide for the largest steam requirements—without the inefficiency of idling larger single boilers as demand slackens.

send for free literature:

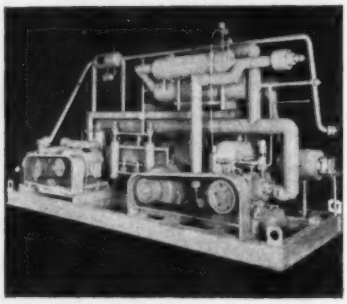
VAPOR HEATING CORPORATION, Dept. 59-F.
80 E. Jackson Blvd., Chicago 4, Ill.

Please rush me your free bulletins on Modulātic Water Tube Boilers.

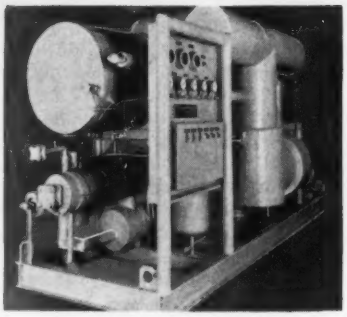
NAME_____
TITLE_____
FIRM_____
ADDRESS_____
CITY, ZONE, STATE_____

Our requirements are:

BHP REQUIRED_____
SAFETY VALVE SETTING_____
MINIMUM STEAM LOAD_____
MAX. STEAM LOAD_____
STEAM PRESSURE_____
TYPE OF FUEL_____



Low stage operation . . .



. . . intermediate & high stage.

Low-Temperature Cooler

Three-stage rotary booster package, including insulated cooler which produces —92F. methanol, is available for frozen food distribution warehouses, field station ice cream hardening rooms, low-temp test chambers, and dairy brine cooling.

Unit is factory-assembled in two sections, each 5-ft. 6-in. wide and 15-ft. long, allowing simple field installation.

Package is tailored for any tonnage and horsepower for individual requirements.—*Freezing Equipment Sales, Inc., York, Pa.*

Circle 312 on Reader Service Card

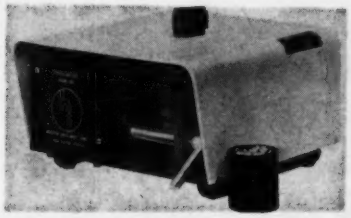
Compact Vertical Mixer

New 200-cu. ft. vertical mixer, designed specifically to receive and discharge materials by air, eliminates horizontal feed-in screw and vertical elevating tube.

Conveying air entering mixer through top is released through vent, which may be connected to bag or complete dust control system. Standard elevating tube and baffle provide thorough mixing.

Unit is mounted on steel framework to accommodate connections to pneumatic materials-handling system.—*Sprout, Waldron & Co., Inc., 130 Logan St., Muncy, Pa.*

Circle 313 on Reader Service Card



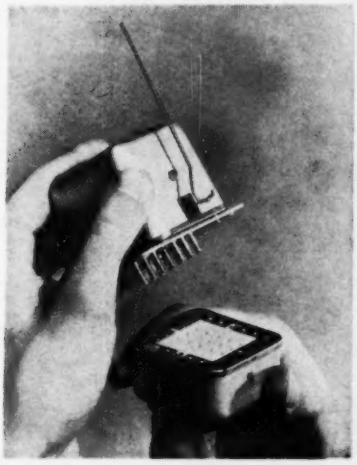
Rapidly Measures Density

New principle for rapid non-destructive volume, density, and porosity measurements on irregular, powdered, and porous solids is incorporated in this Air Comparison Pycnometer.

Food applications include density measurement of grains, cereals, and dried products, and quality control of fats, mixtures, etc. Also possible is grading of pressure expanded cereals and other foods.

Unit requires no liquids, gas pressure determination, or temperature control. Pycnometer is seen shortening accurate density determinations from hours to minutes.—*Houston Instrument Corp., P. O. Box 22234, Houston 27.*

Circle 314 on Reader Service Card



Handy Plug-In Transducer

This plug-in Regohm Transducer regulates such factors as motor speed, fluid pressure, tension, or flow of materials undergoing processing. It mounts directly to equipment to be controlled.

Linkage rod (photo, top) couples to machine and responds to mechanical movement. Change in rod's position as little as .0001 in. enables unit to control up to ¼ kw. of power. —*Electric Regulator Corp., Pearl St., Norwalk, Conn.*

Circle 315 on Reader Service Card

CIRCLE 127 ON READER SERVICE CARD

"the life of an ATLAS tank section begins in the town of Washington, Pa.

. . . where the Washington Steel Corporation produces thin-gauge Stainless Steel in long, flexible bands about a yard wide."*

Washington Steel Corporation is the exclusive supplier of stainless skin for the ATLAS program for a very good reason: it has been able to meet the exacting specifications laid down for this specific undertaking.

Washington Steel Corporation is the pioneer in precision-rolling of light gauge stainless sheets by the Sendzimir process.

*ATLAS—The Story of a Missile
by John L. Chapman, ©1960

WASHINGTON STEEL CORPORATION
6-W WOODLAND AVENUE WASHINGTON, PA.

CIRCLE 128 ON READER SERVICE CARD→

GAYLORD PACKAGING DELIVERY
IS ALWAYS ON THE BALL

Your packaging operation can't get to first base without steady container delivery. So make Gaylord your mainstay—because Gaylord's 16 plants all over the country pitch in to keep your boxes coming, day in and day out, when you want them, where you want them.

Don't let erratic supply throw you a curve. Call your nearby G-Man now, and get him on your team.

CROWN ZELLERBACH CORPORATION
GAYLORD CONTAINER DIVISION

Gaylord Boxes

IN CANADA • CROWN ZELLERBACH CANADA, LTD. VANCOUVER, B. C.

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

No Other
FEEDER
Like It!

electro-permanent magnetic

ERIEZ

HI-VI
VIBRATORY
FEEDER

All-new award-winning feeder built on new concepts of design and materials. Provides accurate, controlled feed of bulk materials *automatically*. Variable feed rate, from ounces to tons. For spreading, sorting, aerating, cooling, proportioning, etc. Feeds all types of bulk materials. Increases production; reduces operating and maintenance cost.

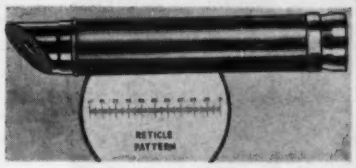
NEW A.C. ELECTRO-PERMANENT MAGNETIC DRIVE PROVIDES GREATER FEEDING CAPACITY • NO RECTIFIER NEEDED • FULLY ENCLOSED POWER ELEMENT PROTECTED AGAINST DUST AND MOISTURE • RUGGED GLASS FIBER SPRINGS REDUCE BREAKAGE • FULLY PROVED IN PLANTS EVERYWHERE.

ALSO AVAILABLE: Economical, specially constructed units for hazardous, dusty locations . . . fully acceptable by Mill Mutual.

WRITE FOR BIG VIBRATORY FACT FILE
Eriez Mfg. Co., 106-FB Magnet Dr., Erie, Pa.

ERIEZ

Equipment & Supplies



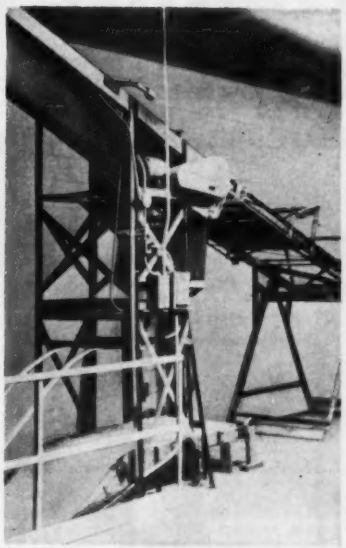
Pocket-Size Microscope

Handy pocket microscope for making a variety of working checks is available for examining objects under 50X magnification.

Quality controllers, production chiefs, machinists and mechanics, inspectors, and lab workers will find it useful for checking small parts, detecting inferior merchandise, etc.

Glass etched reticle is calibrated for measuring $\frac{1}{16}$-in. by .001-in. divisions. Estimates to .005 are easily reached.—*Edmund Scientific Co., Barrington, N. J.*

Circle 316 on Reader Service Card



Floor-to-Floor Conveyor

Continuous flow of materials from one level to another without interruption is enabled with new floor-to-floor conveyor.

Each level may be operated independently or as one continuous moving unit.

Conveyor provides variety of applications for food-process facilities, such as multi-story dairy and brewing plants, also is ideal for warehouse use.—*Mercury Industries, 365 Broadway, Hillsdale, N. J.*

Circle 317 on Reader Service Card

ELIMINATE
TRAMP
IRON
in liquid pipelines

ERIEZ

*Erium powered
magnetic
FERROUS TRAPS

ULTIMATE PROTECTION against fine iron and tramp iron contamination for most liquid-handling pipelines. Ideal for installation in food, chemical and ceramic applications. Protect product purity. Increase production. Prevent abrasive wear; reduce damage to filters, mixers, pumps, etc. Made with strong, one-piece cast bodies, Ferrous Traps withstand pressures up to 150 psi. Provide greater magnetic area than all previous models. Effective with materials up to 750°F. Quickly pay for themselves. Two types: standard stainless steel models and highly polished sanitary models.

MAGNETIC STRENGTH IS GUARANTEED FOR LIFE • QUICKLY, EASILY INSTALLED IN ANY POSITION • CLEAN, SIMPLE DESIGN HAS NO MOVING PARTS • MAGNETIC ELEMENT LIFTS OUT IN SECONDS FOR INSPECTION OR CLEANING • ADAPTABLE FOR LINES FROM ½" to 4".

**Powered by ERIUM —an exclusive, high quality permanent magnetic power source specifically designed and energized by Eriez.*

For full information write today to Eriez Mfg. Co., 106-FA Magnet Dr., Erie, Pa.

ERIEZ

NIAGARA "no frost"

BEST COLD-CONTROL and the LOWEST COST

● You can have 20′ head room and hold below 0° storage space. Niagara's "NO-FROST" method gives you a constant, even safe temperature in every foot of height with plenty of head room to stack your goods and use your fork lift trucks efficiently. You don't have to let ineffective refrigeration force you into bad lay-out. Your storage, break-up and order assembly areas can be just as you want them. Insist that your new building design lets you handle frozen food as fast as dry groceries. You can get it with Niagara "NO-FROST" plus lowest upkeep expense in the business.

Write for Bulletin No. 105

NIAGARA BLOWER COMPANY

Dept. FE-6, 405 Lexington Ave., New York 17, N. Y.

District Engineers in Principal Cities

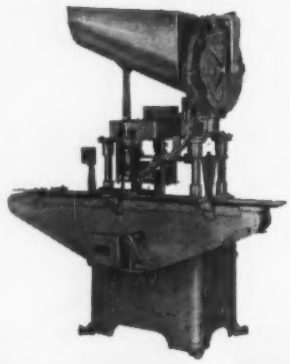
CIRCLE 229 ON READER SERVICE CARD

RESINA

TOPS THEM ALL

fully automatic

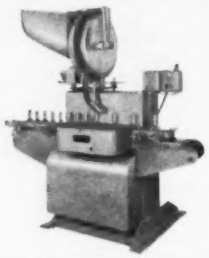
SCREW CAPPER



The RESINA line of CAPPERS include models for sorting, feeding and applying a great variety of caps to bottles, jars or cans from ½ ounce to gallons. Speeds available up to 120 per minute.

fully automatic

FITMENT APPLICATOR



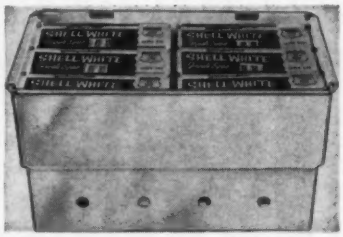
Automatically selects plastic fitments (solid or perforated) with or without lift tabs and orients them into a chute. Passing container picks up fitment which is then snapped on the container. Speeds available up to 120 per minute or higher.

Descriptive literature and specifications on request.

RESINA AUTOMATIC MACHINERY COMPANY, INC.

572 SMITH STREET • BROOKLYN 31, NEW YORK

Equipment & Supplies



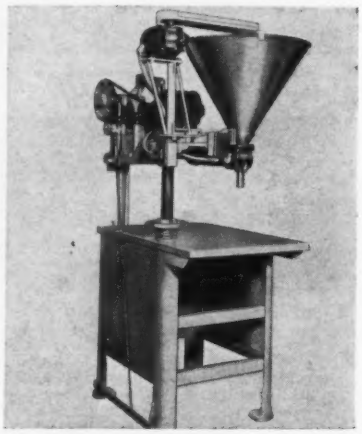
Reduces Egg Breakage

Sturdy, rust-proof aluminum egg box affords maximum protection to cartons of eggs en route to market.

Made of .040 aluminum, box has ¼-in. spring steel reinforcing band around top edges and lid. Weight of empty box is about 9 lb.

Maker says this container will last longer than conventional boxes. Filled unit holds 30 1-doz. cartons. —*Nestaway, Inc., 2108 Payne Ave., Cleveland 14.*

Circle 318 on Reader Service Card



Versatile Hand Filler

Compact manual unit fills a variety of liquid or viscous products and is termed ideal for boil-in-bag operations.

Container sizes up to 32-oz. are handled by standard model, with special size cylinders and pistons available for larger units.

Machine is especially designed for use in plants running moderate outputs or having frequent changeovers for a variety of products.

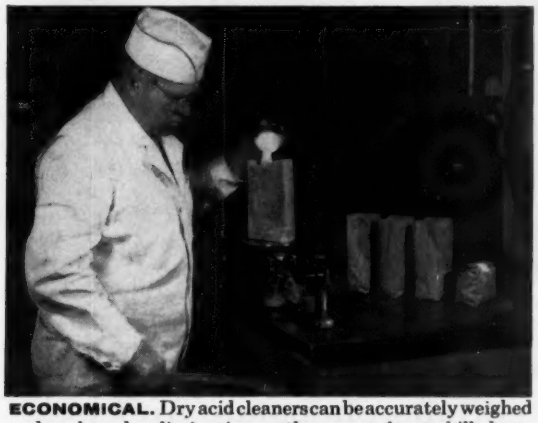
Unit takes only 24x36-in. floor space. Reservoir or manifold feed may be specified. An agitator can be inserted in reservoir for certain products.—*Elgin Mfg. Co., 200 Brook St., Elgin, Ill.*

Circle 319 on Reader Service Card

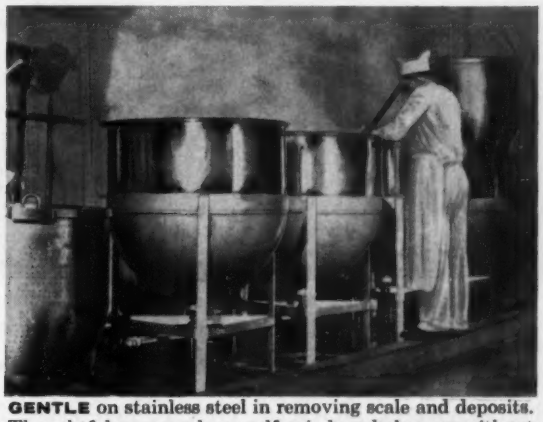
For fast removal of scale and protein deposits from cooking vessels, pipelines, evaporators, use safer **dry acid** cleaners based on **Du Pont Sulfamic Acid**

SAFER TO HANDLE. These dry acid cleaners eliminate hazards of broken carboys, spattered liquids, corrosive fumes. The cleaners are dry, nonfuming powders, packed in easily handled, disposable drums.

EASIER TO USE. Just scoop out required amounts of dry acid cleaner and add to make up tank. Often can be added directly to equipment being cleaned . . . no elaborate equipment or specially trained labor required.



ECONOMICAL. Dry acid cleaners can be accurately weighed and packaged—eliminating costly overuse by unskilled employees. These concentrated cleaners, undiluted by water, save on shipping, handling and storage costs.



GENTLE on stainless steel in removing scale and deposits. Thoughtful personnel use sulfamic-based cleaners without fear of stress cracking or pitting of expensive equipment so easily induced with hydrochloric acid.

Ask your supplier for safer, effective cleaners based on Du Pont Sulfamic Acid, or mail coupon for additional information and names of formulators who offer these compounds.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING ..THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Industrial & Biochemicals Dept., N-2533FE
Wilmington 98, Delaware

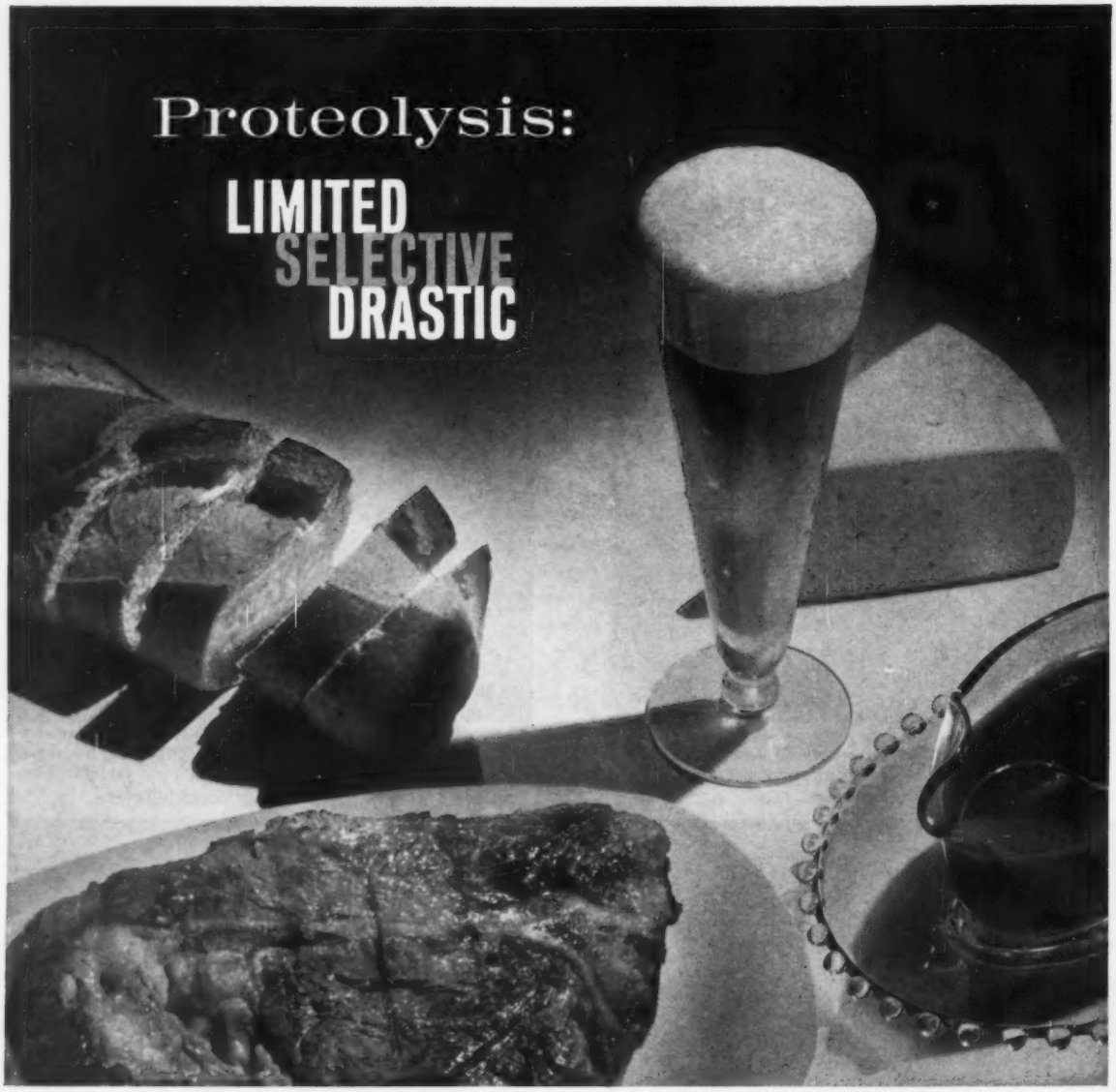
Please send me ☐ sulfamic acid general equipment cleaning bulletin; ☐ names of formulators offering cleaners based on sulfamic acid.

*Name*_____

*Company*_____

*Address*_____

*City*_____ *State*_____



TAKAMINE Proteases for any degree of proteolysis in baked goods, beer, meats, fish, cereals, chocolate and protein hydrolysates. Miles offers you the most complete line of proteases available. Specific proteases to meet your specific needs. Proteases that help increase product quality, that help reduce processing costs. Write for complete information on the wide variety of protease enzymes from Takamine. All inquiries handled promptly.

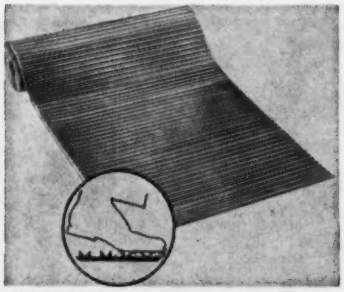
TAKAMINE® (*pronounce it) Tack-a-ME nee)

Miles Chemical Company
DIVISION OF MILES LABORATORIES, INC.,
ELKHART, INDIANA

General Sales Offices: Elkhart, Ind., Telephone COngress 4-3111; Clifton, N.J., Telephone PRescott 9-4776; New York, N.Y., Telephone MUrray Hill 2-7970

It will TASTE better, LOOK better, SELL better with Takamine products

Equipment & Supplies



Stops Dirt at Door

Useful aid to plant sanitation is provided by 'V'-rib-design Shad-O-Rugs and Cross-Rib Runners.

"Windshield wiper action" of heavy duty blades flex just enough to scrape dirt and grime off shoes. Soil is easily removed from rib gulleys.

The ¾-in. live rubber runners are suggested for use in entranceways, corridors, and aisles to help protect critical areas by stopping dirt before it enters room.—*Wear Proof Mat Co., Chicago 12.*

Circle 320 on Reader Service Card

Insulates Ceilings for Less

New low-cost insulation is specifically designed for food processing plants where no permanent ceiling has yet been installed.

Product, known as Alfol aluminum foil reflective insulation, does away with need for expensive extra supports and forms a handsome, maintenance-free ceiling.

Blankets consist of foil layers that reflect 97% of all radiant heat. Material also incorporates vapor-proof backing for protection against condensation.

Foil is stapled across joist faces in wooden beam building construction or may be attached to wood furring strips in steel beamed plants.—*Reflectal Corp., 200 S. Michigan Ave., Chicago 4.*

Circle 321 on Reader Service Card

What's behind the SKILL in Cointreau Liqueurs?

In the Flemington, N. J., plant where fine Cointreau cordials are made, craftsmanship is worth far more than time. For an extra touch of skill in controlling sweetness, Cointreau reached for an accurate Neptune meter... and made impressive savings of time, too!

Sweetness comes from pure cane sugar. Two men formerly were needed to unload and stack the bags. Another man operated the steam-jacketed dissolving kettle. Scale weighing was necessary, and there were always fractional bags of sugar left over, with problems of spillage and storage.

Cointreau now purchases *liquid* sugar... with a Neptune Auto-Stop meter for accurate measurement. The meter controls the quantity *automatically*. Each batch now takes only a few seconds of one man's time.

Want to improve quality... save time? Invariably Neptune meters do *both*... at a cost lower than you'd think. Find out today.

GET THE FACTS
Ask for helpful Meter Data Bulletin 566 IF See Neptune Data Pages in Chemical Engineering Catalog.

NEPTUNE METER COMPANY
LIQUID METER DIVISION
47-25 34th St., Long Island City 1, N.Y.

neptune

Branches in:
ATLANTA • BOSTON
CHICAGO • DALLAS • DENVER
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NO. KANSAS CITY, MO.
PHILADELPHIA (Bala Cynwyd)
SAN FRANCISCO (Millbrae)
Canada: Neptune Meters, Ltd.,
TORONTO 14, ONTARIO

CIRCLE 133 ON READER SERVICE CARD

WHEN THE PRODUCT YOU PACKAGE IS

STICKY

PATAPAR RELEASING PARCHMENT WILL PROVIDE THE "LET-GO" YOU NEED

Here, the packager has to worry about a substance whose moisture and sugar content results in extremely adhesive qualities . . . but the product must never stick to its container. Patapar Releasing Parchment provides the needed combination of resistance to moisture and sugar penetration, and low adhesion factor.

Other Patapar Releasing Parchments provide quick release for foodstuffs such as frozen meats, where ice makes separation difficult . . . plastics, where extreme temperatures and inherent tackiness make it necessary to include the releasing parchment in the production process . . . and adhesive materials, where the product can stick to itself or its user.

Send for free samples of Patapar Releasing Parchments and informative brochure describing the whole Paterson line of Releasing Parchments.

Patapar®
RELEASING PARCHMENT

75th ANNIVERSARY
SPECIALTY PAPERS FOR INDUSTRY
SINCE 1885

PATERSON PARCHMENT PAPER CO.
BRISTOL, PENNSYLVANIA
Sales Offices: New York, Chicago • West Coast Plant: Sunnyvale, Cal.

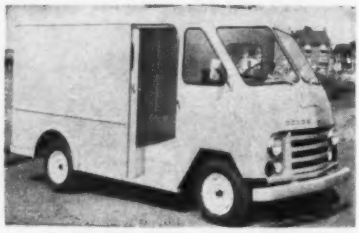
Fast, Accurate Weigher

High-speed weigher with accuracy of 1/20-oz. delivers finished charges at speeds to 70/min. with no unnecessary stopping or starting.

Unit has eight scales glove-fitted in a merry-go-round under a single variable feedback control. Charge is received in one tray, while others are being trimmed, check-weighed, and emptied into package or carton.

Entire operation is automatic and can handle any free flow or semi-free flow product from ¼-oz. to 20-oz.—*The Olofsson Corp., 2727 Lyons Ave., Lansing, Mich.*

Circle 322 on Reader Service Card



Lightweight Delivery Truck

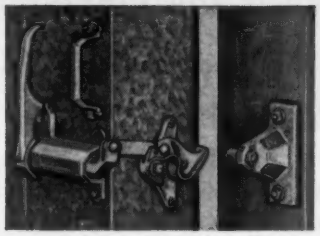
New half-ton stripped forward control chassis from Dodge Truck Div., Chrysler Corp., has 104-in. wheelbase and small 6-cylinder engine for light duty work on delivery routes.

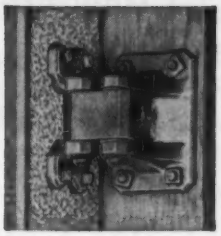
Available for installation on chassis is the Minivan Delivery Body with a payload capacity of 213 cu. ft., and loadspace measuring 90-in. long, 66-in. wide, and 62-in. high.

Body is of lightweight construction, with all parts zinc-chromate primed before and after assembly. Unit combination of chassis (4,250-lb. capacity) and body is designed for overall economy of purchase and operation.—*Boyertown Auto Body Works, Boyertown, Pa.*

Circle 323 on Reader Service Card

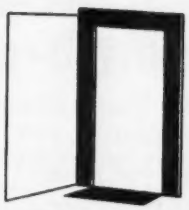
For The Finest Cold Storage Doors Specify JAMISON with these exclusive features





Exclusive JAMISON Hardware

- Rugged cast construction
- Patented heavy duty design
- Adjustable hinges and fastener assure tight seal during life of door
- Hot dip galvanized finish. Heavy coating of prime zinc gives maximum protection.



Exclusive JAMISON FROSTOP (optional feature)

- Prevents frost or ice on door frames even as low as —50°
- Prevents door from freezing shut, eliminates damage from forcing open frozen doors
- Assures tight seal at all times, prolongs gasket life.

ZEROSEAL GASKET

TRIPLE SILLSEAL GASKET

Exclusive JAMISON Gasketing

"Zeroseal"

- Wide, flat seal
- Extends around sides and top
- Extra resilient and pliable

"Sillseal"

- Triple Wiper Seal
- Flexible, abrasion and grease-resistant
- No capillarity

Full details on the Jamison Super Freezer Door are contained in Bulletin #5. Write for your copy to Jamison Cold Storage Door Co., Hagerstown, Md.

JAMISON

COLD STORAGE DOORS

CIRCLE 135 ON READER SERVICE CARD 135

Do you check these points When Buying **STAINLESS STEEL** *Valves?*

- ☐ **How good are the castings?**
- ☐ **How precise is the machining?**
- ☐ **How rigid are the inspection and testing?**
- ☐ **How sound is the design?**

Just as important as a suitable stainless steel alloy are these four checks on valve quality. For long, dependable performance, a valve should rate *perfect* on every one.

There's a very good reason why you can be sure Jenkins Stainless Steel Valves will do that, unvaryingly:

For almost a century Jenkins has specialized in making valves. And making them to one standard of quality . . . the highest. Every operation and every worker is aimed at fulfilling that standard. The result is a product that can be backed by this 91-year-old assurance for valve users:

A Fair Offer

If you will put a Jenkins Valve, recommended for your particular service, on the worst place you can find . . . where you cannot keep other valves tight — and if it is not perfectly tight or it does not hold steam, oil, acids, water or other fluids longer than any other valve, you may return it and your money will be refunded.

Order these reliable Jenkins Valves from your local Jenkins Distributor. Ask him or write us for Stainless Steel Catalog No. 59SS. Jenkins Bros., 100 Park Avenue, New York 17.

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES
JENKINS SINCE 1864 Jenkins Bros

Sold Through Leading Distributors Everywhere

Epoxy Spray Unit

Low-pressure, high-volume air epoxy spray gun disperses materials of trowel consistency on floors and walls 3 to 10 times faster than conventional application methods, according to supplier.

Quik Spray equipment is portable, easily assembled, and has an output of up to 10 cu. ft./min. Power for rotary-type compressor is provided by 2½ hp. gas engine or ½ hp. electric motor.

Unit adjusts for gravity or pressure spraying. On former, it covers 8,000 sq. ft. with 3/32-in. coating in 8-hr. day, using low or no-aggregate epoxy. Employing pressure unit with high aggregate, 5,000 sq. ft. of 1/8-in. coating is applied in same period.—*Pennsalt Chemicals Corp., Natrona, Pa.*

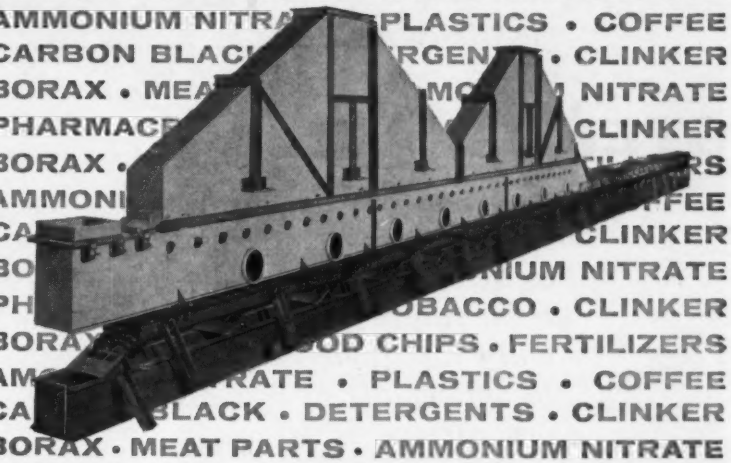
Circle 324 on Reader Service Card

INGREDIENTS

Two New Annatto Food Colors are reported to compare most favorably as colorants with coal tar yellow #3 and #4, which, per government ruling, are no longer certifiable. Both A-500 and AT-250 have wide application in foods containing fat or oil ingredients, and are cited as carotenoids most stable to light and heat.—*Chr. Hansen's Lab, 9015 W. Maple St., Milwaukee.* (325)

Fat Acids, Esters, Alcohols, and Amines, from C_6 to C_{18}, are available in high degree of purity for precision work as comparative standards, and in research.—*Lachat Biochemical*

CARBON BLACK • DETERGENTS • CLINKER
BORAX • MEAT PARTS • AMMONIUM NITRATE
PHARMACEUTICALS • TOBACCO • CLINKER
BORAX • PEAS • WOOD CHIPS • FERTILIZERS
AMMONIUM NITRATE • PLASTICS • COFFEE
CARBON BLACK • DETERGENTS • CLINKER
BORAX • MEAT PARTS • AMMONIUM NITRATE
PHARMACEUTICALS • TOBACCO • CLINKER



HEAT TRANSFER
cooling-drying ON THE RUN!

Carrier Processing Conveyors combine conveying and processing to save space...reduce costs...increase capacity...protect products.

The conveyor shown above dries, screens and conveys carbonaceous particles at the rate of over 2 t.p.h. Moisture is reduced from 14% to ½% using 350° F. air in just the first 30 feet. Material is conveyed a total of 80 feet.

HERE'S WHAT CARRIER "CUSTOM ENGINEERED" CONVEYORS CAN DO FOR YOU

SAVE SPACE...require less headroom ...can elevate material as well as straight-line convey. Simple accessories make possible additional operations such as screening...lump breaking...sampling.

REDUCE COSTS...double-duty Carrier Conveyors eliminate need for multiple units. Operating and maintenance costs are far lower than for other types of process equipment.

INCREASE CAPACITY...size for size... job for job. Carrier Conveyors assure maximum capacity and greater return on your investment.

PROTECT PRODUCTS...gentle Natural Frequency conveying action protects fragile crystals or pellets. There is no product breakdown...no segregation. Simple, easy-to-clean troughs keep food and pharmaceuticals contamination-free.

Carrier laboratories will provide test data on your materials. Write Carrier Conveyor Division, CHAIN Belt Company, 215 North Jackson Street, Louisville 2, Kentucky.

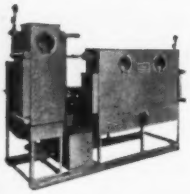
CARRIER CONVEYOR
NATURAL FREQUENCY® VIBRATING EQUIPMENT
CHAIN BELT COMPANY

CONVEY • FEED
DEWATER • SCREEN
COOL • DRY
SCALP • COAT
DISTRIBUTE • ELEVATE

CIRCLE 137 ON READER SERVICE CARD 137

KATHABAR® SYSTEMS

Give these advantages to specifying engineers:



STERILE AIR

Now you can design spaces to maintain air sterility as scientifically as temperature and humidity. Only Kathabar enables you to deliver air at 5 micro-organisms per 10 cu. ft. or less, continuously.

FROST-FREE COOLING

Get continuous air supply at dry bulbs and dew points way down to –90 F. No freeze-ups... no fluctuating efficiency... no defrosting shutdowns... no duplicate sets of coils. Cool better; fewer tons. Proved in candy cooling... brewery fermentation cellars... bakery dipping and icing... radiant panel cooling... environmental testing labs.

GET FACTS

Surface Combustion • *2382 Dorr St., Toledo 1, O.*
A Division of Midland-Ross Corporation

Send facts on Kathabar systems for following application:

.....

.....

name & title.....

company.....

street.....

city.....*zone*.....*state*.....

59-2F

Equipment & Supplies

Co., 2202 W. 107*th Pl., Chicago* 43. (326)

Line of Dry Seasonings is based on spray dried oils and oleo-resins, precisely formulated for use as alternates for crude spices, essentials oils, solubilized oils, and dry solubles. Maker says Spisoseals feature full-bodied flavor and ease of handling. —*Dodge & Olcott, Inc.*, 180 *Varick St., N.Y.C.* (327)

NEW SUPPLIES

Non-Skid Palletizing Coating for bags, beer cases, grocery cartons, and other containers is highly concentrated liquid which can be diluted with water and sprayed directly on container. Non-skid surface permits stacking and handling without fear of sliding.—*Adhesive Products Corp.*, 1660 *Boone Ave., N.Y.C.* 60. (328)

Waterproof Code Dating and Marking Ink is offered for use on waxed paper, aluminum foil, cellophane, and other hard to mark surfaces. Material drys quickly when used, yet remains moist on stamp pad or inker.—*Kiwi Coders Corp.*, 4027 *N. Kedzie Ave., Chicago* 18. (329)

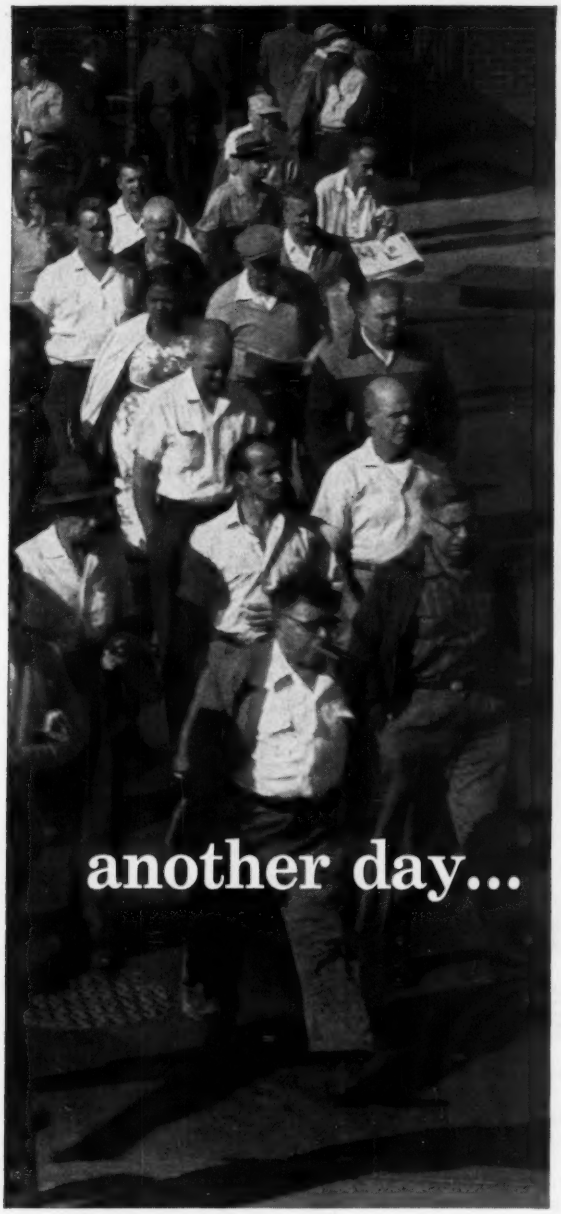
Concentrated Disinfectant & odor eliminator kills both gram-positive and gram-negative bacteria. Futron 25 is termed effective even at dilution of 1 part to 500 parts water.—*Hysan Products Co.*, 932 *W.* 38*th St., Chicago* 9. (330)

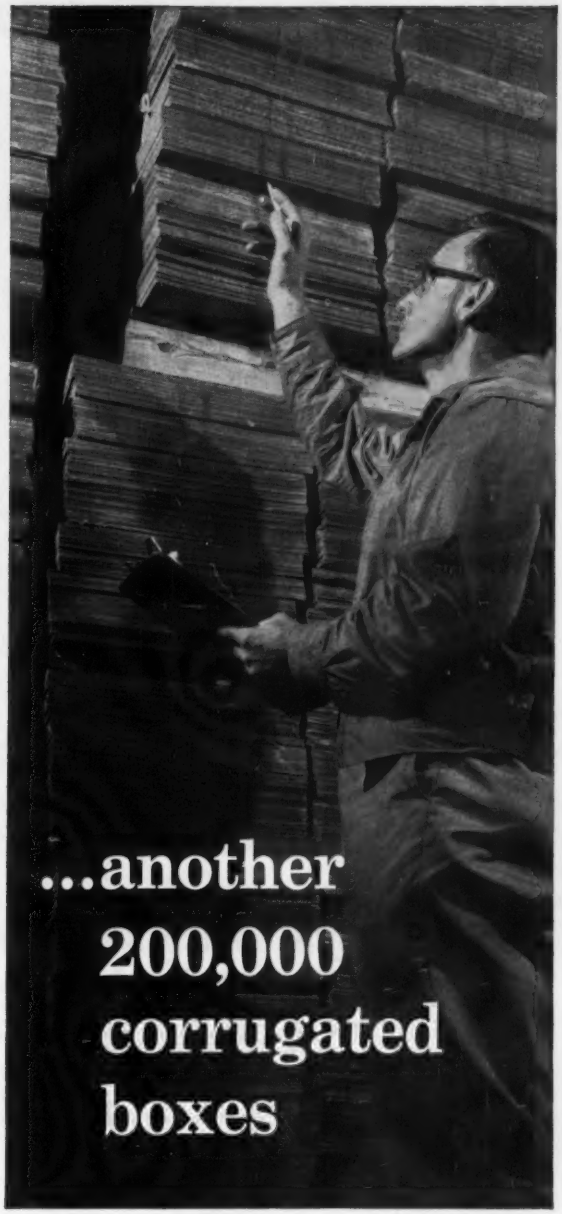
BRIEFS

Ultrasonic Cleaner features low-cost utilization of several simultaneous high and low frequencies. Maker cites efficient, uniform cleaning.—*McKenna Labs*, 2503 *Main St., Santa Monica, Calif.* (331)

New Lift Trucks in 3,000, 4,000, and 5,000-lb. capacities are designed, engineered, and constructed with emphasis on ruggedness, economy, service accessibility, and operator comfort. Each has maximum 52 hp. —*Allis-Chalmers Mfg. Co., Box* 512, *Milwaukee* 1. (332)

Pressure Gage Tester comes complete with tools for faulty gage readings. Simple design and operation facilitates precision testing. — *Con-*





In an eight-hour shift, Hinde & Dauch's Chicago plant (just one of seventeen) manufactures as many as 200,000 standard regular slotted boxes. This *volume capacity* is important to H & D customers. It assures them of a virtually limitless supply, a highly reliable source of the boxes they need for sustained production. After all, isn't this the kind of supplier support you'll be demanding during the competitive months to come?

Hinde & Dauch Division

West Virginia Pulp and Paper

HINDE & DAUCH DIVISION, WEST VIRGINIA PULP AND PAPER, SANDUSKY, OHIO • 17 PLANTS • 42 SALES OFFICES

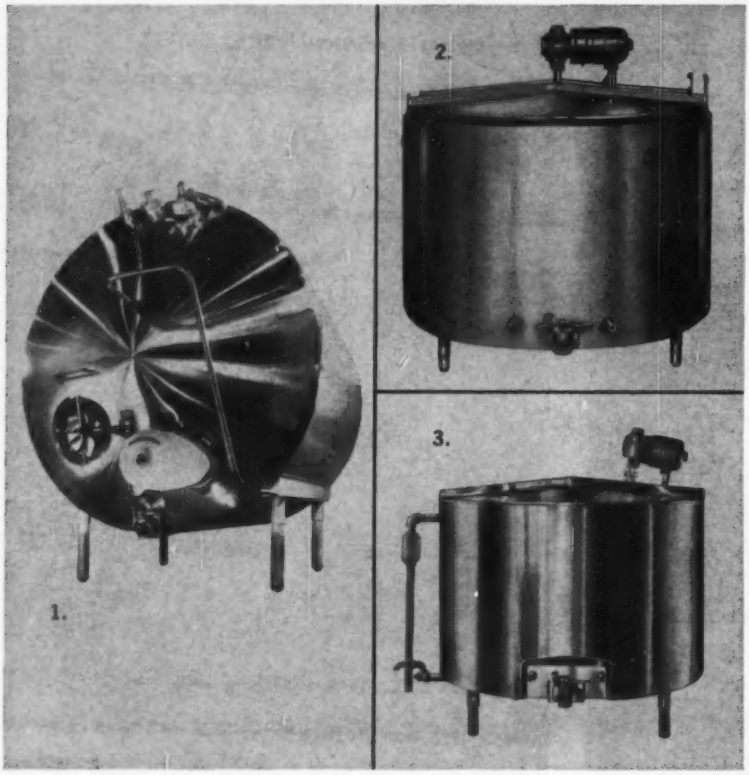
solidated Siphon Supply Co., Inc., 22 Wooster St., N.Y.C. 13. (333)

Automatic Wax Dropper for application of outsert folders to packages assures fully automatic delivery and provides complete adjustability to different positions, operating at speeds to 60 units/min.—*Outserts, Inc., Scranton, Pa.* (334)

Giant Stem Thermometer provides accurate temperature measurement in deep vats, kettles, tanks, stacks, ovens, ducts, etc. Hand calibrated for accuracies within 1% of full scale reading, 6-ft. model is available in 0-200F. and 200-1,000F ranges.—*W. C. Dillon & Co., 14620 Keswick St., Van Nuys, Calif.* (335)

Case Indexing on Uncaser Conveyor positions brewery cases under lifting heads with positive accuracy at high speed. Index fits every type case used in breweries today, including 6 through 32-oz. bottles with or without carry packs.—*Climax Products Div., Lodge & Shipley Co., 3055 Colerain Ave., Cincinnati 25.* (336)

FLUIDICS* AT WORK



Three ways to increase efficiency in dairy and food processing

For storage, processing, or pasteurizing you'll find a line of Pfaudler® equipment to help you do the job efficiently.

1. Storage. More milk is stored in Pfaudler-built tanks than in any other make—with good reason. Every tank is made to 3-A sanitation standards. Construction of wall cooler sections for ammonia, freon or chilled water is ASME approved. Choose from cylindricals or rectangulars in 600 to 8000 gallon capacities — if you need more capacity, we can provide it in the 10- to 20,000 gallon range. Often you can "stretch" cramped floor space with our rectangular tank design.

2. Pressure Process Vats. In any size, from 100 to 1000 gallons, you get effective heating or cooling of any fluid product, plus mixing, blending, and holding. Run full or partial batches. Pressurizing jacket, where appropriate, cuts process time. You can also specify *vacuum-pressure* vats for removing unwanted tastes and odors during processing.

3. Mixer-Pasteurizer. Here's the way to thorough blending of additives including powders, frozen cream and butter. Proper agitation assures you of no "lumping." Heat-up is fast. Select capacities from 150 to 1000 gallons, in stainless steel.

For complete information on any of these products, write to our Pfaudler Div., Dept. FE-60, Rochester 3, N.Y.

*FLUIDICS is the Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

PFAUDLER PERMUTIT INC.

Specialists in FLUIDICS...the science of fluid processes

140 CIRCLE 140 ON READER SERVICE CARD

One
DETECTO
Speed Scale does the work of *two* operators

Streamline your plant operation with this trouble-free, simplified, highly sensitive scale. The slightest discrepancy of over-weight or under-weight is instantly revealed by DETECTO'S over-under indicator. Write for information on full line of industrial weighing equipment from 1/100 oz. to 100 ton: **DETECTO SCALES, INC.**
Dept. G 1, 540 Park Ave., Brooklyn 5, N. Y.

CIRCLE 230 ON READER SERVICE CARD

How much more does quality cost?

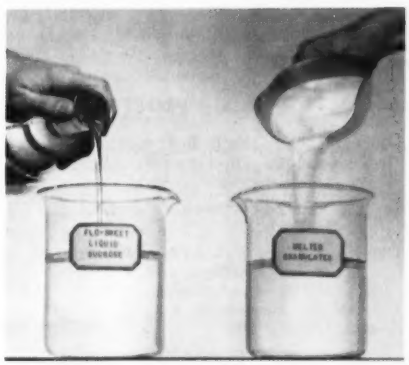
Not a penny, when you use Flo-Sweet for sweetening!

In fact, Flo-Sweet *saves* you money in a number of important ways. By eliminating manual handling of sugar. By avoiding sugar melting costs. In many areas, in the cost of sugar itself.

But a vital reason for the revolution that Flo-Sweet is making in food processing is *quality*. Flo-Sweet liquid sugars make possible a degree of quality control, and even quality improvement, that is difficult or too expensive with ordinary granulated.

You can easily verify Flo-Sweet's higher quality yourself, through the simple test shown at the right. Just dissolve some of your favorite granulated . . . concentrate it to 67° Brix . . . and compare its color with that of Flo-Sweet liquid sucrose.

Your Flo-Sweet engineer will be glad to help you explore ways to use Flo-Sweet liquid sugars in cutting costs while boosting quality. Why not consult him soon?



REFINED SYRUPS & SUGARS, INC.

YONKERS, NEW YORK

SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY
FROM YONKERS, ALLENTOWN, DETROIT, TOLEDO

FLO-SWEET®

FIRST IN LIQUID SUGAR

JUST OFF THE PRESS

PLANT ENGINEERING

Nitrogen Generators. Includes specs and features of packaged gas atmosphere units. 4p.—Gas Atmospheres, Inc., Cleveland. (418)

Carbureted Engines. Details G-138 power plant for hp to 39 bhp at 1800 rpm. 8p.—Allis-Chalmers Co., Milwaukee. (419)

V-Belts. Describes simulated service tests on variety of belting. 8p.—E. I. duPont de Nemours & Co., Wilmington, Del. (420)

Sump Pump. Details compact, easily-installed, and seal-less designed models. 4p.—Fostoria Corp., Fostoria, Ohio. (421)

Spray Nozzles. Describes line of both wide spray, fulljet, and slope bottom, whirljet nozzles. 8p.—Water Cooling Corp., N.Y.C. (422)

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Inspection Checklist. Provides reference guide for efficient sanitary control.—Puritan Chemical Co., Atlanta, Ga. (464)

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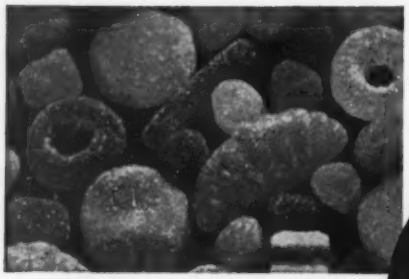

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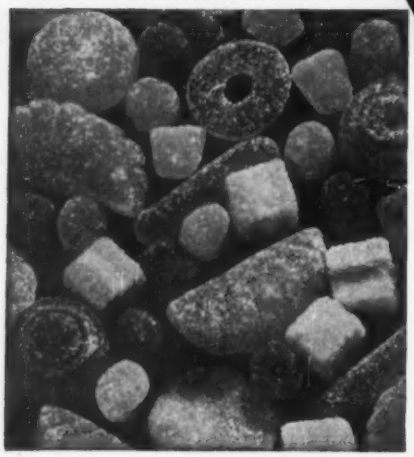

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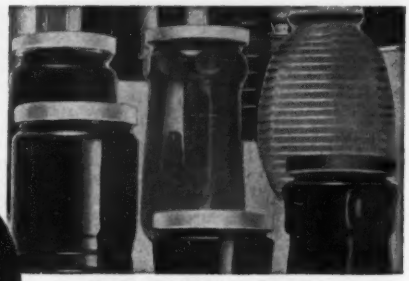

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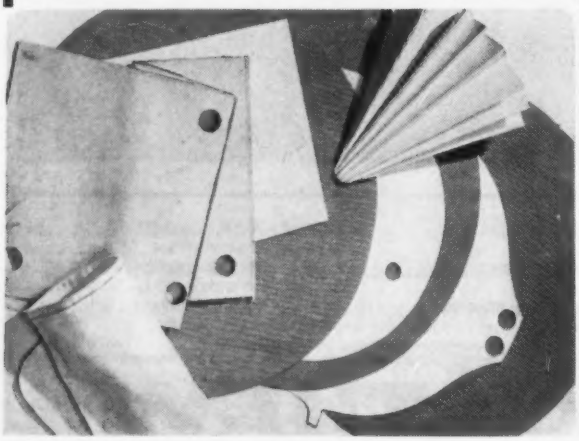

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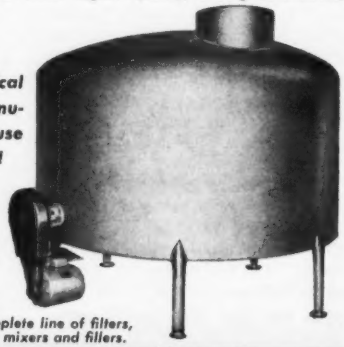

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Ultra Clean Facility Control. Describes methods for proper cleaning. 8p.—Shielding, Inc., Riverton, N. J. (465)

INSTRUMENTS

Transmitter-Receiver Controls. Details equipment for remote temperature applications. 8p.—Powers Regulator Co., Skokie, Ill. (466)

Vapor Fractometer. Describes new gas chromatography instrument with high-resolution Golay columns. 34p.—Perkin-Elmer Corp., Norwalk, Conn. (467)

Temperature Detector. Describes sealed, resistance type unit for accurate measurement. 2p.—Bailey Meter Co., Cleveland. (468)

Lab Equipment. "What's New for the Lab" describes firm's 24 new items. 16p.—Scientific Glass Apparatus Co., Bloomfield, N. J. (469)

Recording Spectrophotometer. Details double-beam, double-grating, UV-visible model. 16p.—Burrell Corp., Pittsburgh. (470)

Steam & Water Manual. Engineer's guide for selection of automatic heating and cooling controls.—Powers Regulator Co., Toronto, Ontario, Canada. (471)

Water Reducing Valves. Points up methods of eliminating water waste through proper valve selection and application. 4 p.—Leslie Co., Lyndhurst, N. J. (472)

Flow Meters. Describes line of electrical remote-reading units for steam, water, oil, and specific liquids. 28p.—Republic Flow Meters Co., Chicago. (473)

Lab Apparatus. Details firm's complete line. 344p.—Fischer & Porter Co., Warminster, Pa. (474)

INGREDIENTS

Lactose. Details properties and applications of milk sugar for new and improved dairy products. 24p.—Western Condensing Co., Appleton, Wis. (475)

Sorbic Preservative. Describes features and applications of sorbic and potassium sorbate (water-soluble fungistat). 18p.—Union Carbide Chemicals Co., N.Y.C. (476)

MARKETING

Robinson-Patman Act. Discusses effect on cooperative

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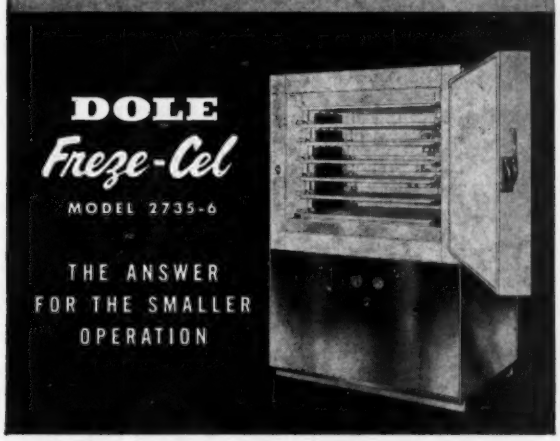

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advertising and FTC's interpretation.—The Advertising Checking Bureau, N.Y.C. (477)

'Big Ten' Analysis. Describes strategy of ten '59 brands which had impressive sales gains. 12p.—A. C. Nielsen Co., Chicago. (478)

POP Checklist. Details planning, development, production, and distribution of point-of-purchase advertising. 14p. — Point-of-Purchase Advertising Institute, N.Y.C. (479)

Family Income Study. Summarizes data on income by education, by wife, and by number of earners. 5p.—Curtis Publishing Co., Philadelphia. (480)

Duluth - Superior Market. Consumer analysis measures product and brand usage. 98p. — Duluth Herald, Duluth, Minn. (481)

Sacramento-Fresno-Modesto Markets. Consumer analysis studies buying habits and brand usage. 270p.—McClatchy Newspapers, Sacramento, Calif. (482)

Greater Seattle Market. Consumer analysis covers buying habits, brand preference, etc. 120p.—Seattle Times, Seattle. (483)

Direct Mail. Details uses and advantages. 44p.—DMCP Associates, Toledo, Ohio. (484)

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Product Development. Describes relationships of independent lab and trade association.—Foster D. Snell, Inc., N.Y.C. (485)

New Product Planning. Describes firm's services 4p.—Richard Lewis & Assoc., Los Angeles. (486)

Employee Uniforms. Gives pointers on selection of practical, economical, and satisfactory garments. 12p.—Institute of Industrial Launderers, Washington, D. C. (487)

Employee Booklets. Cites advantages of reading racks. 16p.—Employee Relations, Inc., N.Y.C. (488)

Poultry Inspection Act. Comments by Dr. Cliff D. Carpenter, former IAPI president. 4p.—Riegel Paper Corp., N.Y.C. (489)

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- Orange Pineapple
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- Strawberry
- Mint Lime
- Peach
- Banana
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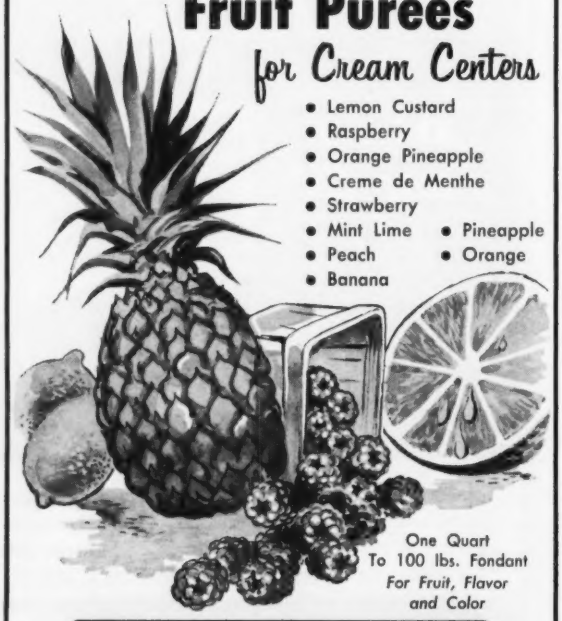

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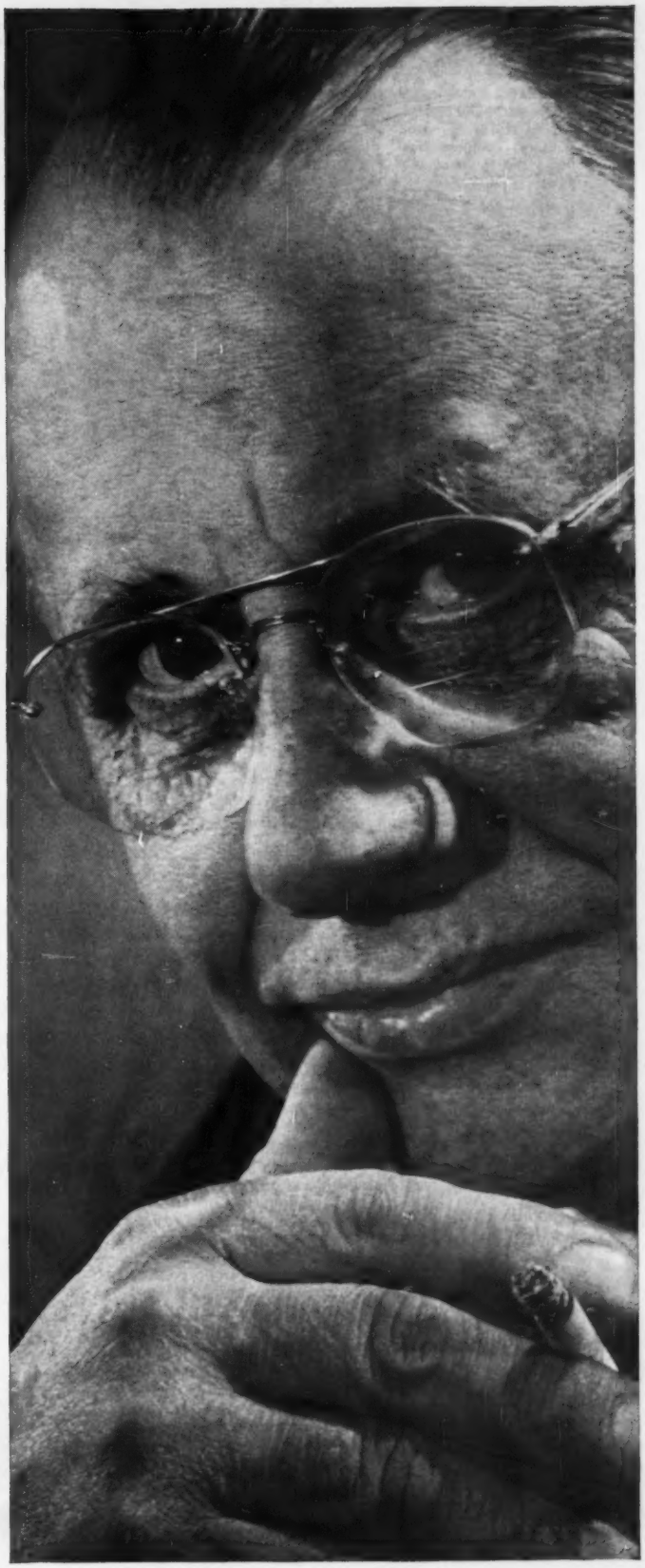

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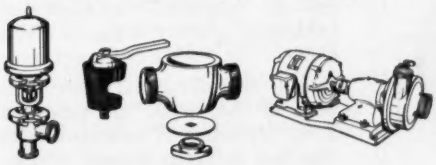

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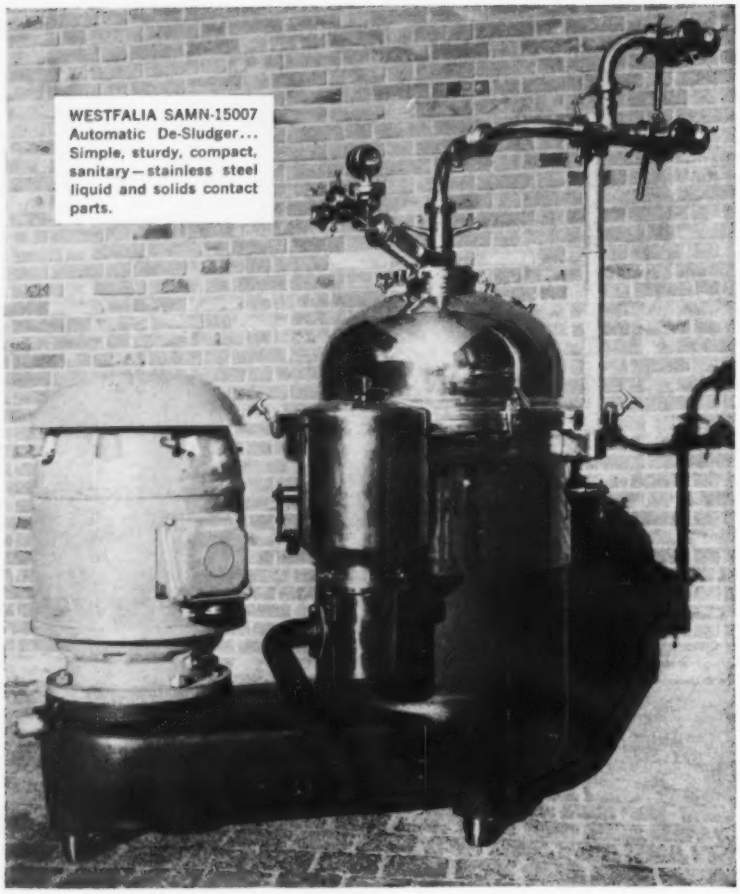
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'New Breed' of Researchers

THE CHARACTERISTICS OF ENGINEERS AND SCIENTISTS *by Lee E. Danielson. University of Michigan Bureau of Industrial Relations, Ann Arbor, Mich.* 1960. 136p. *Price:* $4.

The "new breed of scientists and engineers in American industry" is critically evaluated by the author, an associate professor of business administration at the University of Michigan.

Termed "College educated and money minded," this new type of researcher is taken apart psychologically to see what makes him tick and why he does not respond well to many traditional management practices.

Author's findings are based on interviews with 44 executives, 91 supervisors, and 277 non-supervisory personnel in 10 research organizations.

Guide to Management

INDUSTRIAL RESEARCH MANAGEMENT. *Ed. by Carl Heyel. Reinhold Pub. Corp., 430 Park Ave., N.Y.C.* 22. 1959 520p. *Price:* $12.

Handbook provides sound and professional guidance to competitive survival, growth, and diversification. Over 30 experts in research managements discuss subject's problems and solutions.

Aimed at filling needs of top management, research directors, executive directors, and financial executives, this authoritative volume covers 5 major areas—Management Perspectives; Research Operations; Accounting, Control, and Evaluation; Personnel Administration in Research; and Government Contract Research.

Study in Food Analysis

ZYWNOSCI (ORGANOLEPTIC ANALYSIS OF FOOD) *by Dr. D. J. Tilgner, Politechnika Gdanska. Pub. by Wydawnictwo Przemysl u Lekkiego i Sposywczego, Warsaw, Poland.* 1957. 364p.

Both theoretical and applied aspects of the subject are presented here. Separation of subjective from objective testing is stressed, and se-

lection-training of panel judges is thoroughly discussed.

Although published in Polish, study is reviewed here because of the relatively few books available on organoleptic food analysis. Definitions and sensoric terminology are presented in 5 languages.

Marketing Equipment

MARKETING KEYS TO PROFITS. *Ed. by Wenzil K. Dolva. American Marketing Assn., 27 East Monroe St., Chicago 3. 1960. 640p. Price:* $7.50; *(AMA members,* $5).

Presented here are proceedings of the 42nd National Conference of the AMA held in Cleveland, June, 1959.

Forecasts for '60 decade include marketing management, the consumer, marketing research, agriculture marketing, government and marketing, etc. In all, 69 speeches are included.

Booklets & Reports

THE BUSINESS MAN IN POLITICS. *American Management Assn., 1515 Broadway, N.Y.C. 36. 1959. 146 p. Price:* $3.75. *($2.50 to AMA members).* The reasons for the trend toward more active involvement of businessmen in political and governmental affairs are pointed up by leading industry executives and notable political leaders.

FOOD PREFERENCES OF MEN IN THE ARMED FORCES. *Quartermaster Food & Container Institute, Quartermaster Research & Engineering Command, 1819 W. Pershing Rd., Chicago 9. 1960. 160 p. No charge.* Here are the correlated results of a survey and analysis of the food likes and dislikes of the G.I.

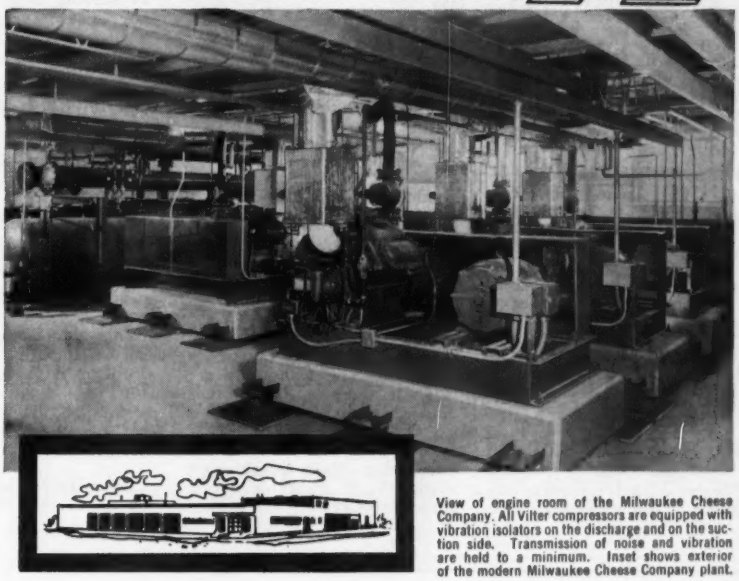
EVALUATING SOYBEANS BY DIELECTRIC ANALYSIS AND OTHER METHODS. *Marketing Research Report No. 367, USDA, U. S. GPO, Washington 25, D. C. 1959. 36 p. Price: 25¢.* Expanded information on the relative accuracy of soybean oil content estimates based on official grade factors for '55-'56 marketing season.

INCINERATOR STANDARDS. *Incinerator Institute of America, 420 Lexington Ave., N.Y.C. 17. 1960. 12 p. Price:* $1. Standards define terminology, analyze waste, classify incinerators, and state specifications by classes.

300 kinds of tempting cheese held to taste perfection under precise temperature and humidity control

Milwaukee Cheese Company is the home of world famous Beer Kaese, Kimelkase, Queen of Wisconsin, and Wunderbar among others.

Beer Kaese



View of engine room of the Milwaukee Cheese Company. All Vilter compressors are equipped with vibration isolators on the discharge and on the suction side. Transmission of noise and vibration are held to a minimum. Inset shows exterior of the modern Milwaukee Cheese Company plant.

Keeping customers happy with a wide variety of tasty cheeses and specialty food products is the engaging business of the Milwaukee Cheese Company. Helping to preserve the "goodness" of their products is a Vilter refrigeration system.

The refrigeration installation consists of a two-stage system employing Vilter VMC reciprocating compressors for both stages. The set-up incorporates liquid recirculation using Refrigerant-12.

In the freezer room, the air units are fed by two recirculating pumps. The refrigerant is circulated to two large air units whose air is distributed through efficient duct work. The air units are defrosted automatically by hot gas.

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Air Units • Ammonia and Freon Compressors • Booster Compressors Baudelot Coolers • Water and Brine Coolers • Blast Freezers Evaporative and Shell and Tube Condensers • Pipe Coils Valves and Fittings • Pakice and Polarflake Ice machines.

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CIRCLE 149 ON READER SERVICE CARD 149

RECENT INVENTIONS

PRODUCTS

Active Dry Yeast by Evaporating Water From Liquid Medium Suspension That Doesn't Evaporate at Drying Temperature.—W. R. Johnston, Standard Brands Inc., N.Y.C. No. 2,919,194.

Fruit Juices Enriched with Casein, Milk or Soy Proteins and Non-Denatured Egg Yolk—R. J. Block, Minute Maid Corp., N.Y.C. No. 2,-919,195.

Puffed Goods Mix Comprising Gelatinized Starch, Ungelatinized Film-Forming Starch and Shortening.—E. W. Johnson, General Mills, Inc., Minneapolis. No. 2,-919,986.

Solid Emulsion of Globules of Volatile Liquid Flavoring Dispersed in Carrier Base.—T. H. Schultz, USDA. No. 2,919,989.

Fried Egg White Containing Tricetin and Calcium Stearyl-2-Lactylate to Improve Whipping.—J. M. Gorman, Seymour Foods, Inc., Topeka, Kan. No. 2,-919,992.

Stabilized Egg-Milk Product.—B. Heinemann, Producers Creamery Co., Springfield, Mo. No. 2,920,-966.

Powdered Yeast With High Wettability and Dispersibility in Water.—R. B. Parker, Carnation Co., Los Angeles. No. 2,921,854.

Highly Nutritional Margarine.—D. Melnick, Corn Products Co., Bayonne, N.J. No. 2,921,855.

PROCESSING

Steam-Pressure Cooking Foods in Comminutor Chamber.—Le Roy R. Hawk, W. J. Fitzpatrick Co., Chicago. No. 2,912,330.

Stabilizing Malt Beverages With Water-Insoluble Organic Polyelectrolyte.—I. M. Stone, Baxter Laboratories, N.Y.C. No. 2,912,333.

Producing Powdered Soluble Tea Extract.—D. Wetherits, Clarens, Switzerland. No. 2,912,334.

Preserving Eggs by Vibrating at Low Audible Frequencies While Freezing.—A. C. Haller, Sterling, Va. No. 2,912,335.

Processing Canned Meats by Adding Racemic Alanine and Raising Temperature.—R. A. Greenberg, Swift & Co., Chicago. No. 2,912,337.

Vacuum Drying Tomato Solids, Starch and Fat to Form Tomato Basic.—J. A. Barnes, Pillsbury Co., Minneapolis. No. 2,912,338.

Generating Vinegar by Pressure-Dispersing Small Air Bubbles in Liquid Containing Alcohol and Acetobacter.—A. C. Richardson, California Packing Co., San Francisco. No. 2,913,343.

Concentrated Coffee Extract by Contacting Progressively Fresher Coffee Grounds Concurrently With Aqueous Extraction Liquor. — H. Guggenheim, General Foods Corp., N.Y.C. No. 2,915,399.

Improving Nutritive Content of Eggs by Wetting Shell With Inert Liquid Carrier and Edible Enhancer. — W. Seltzer, Vineland, N.J. No. 2,915,400.

Improving Margarine by Blending Emulsified Mix While Passing Through Chilled Cylinder.—R. Knollenberg, Lubeck, Germany. No. 2,915,401.

Adding Stabilizer to Fermented Beer That's Then Treated With Caseous SO_2. — R. G. Shaler, American Tansul Co., San Francisco. No. 2,916,377.

Making Chips by Cooking Corn, Cooling, Grinding, Kneading Dough Between Rollers, Cutting, Oven Drying and Fat Frying.—B. H. Kunce, Fiesta Foods Corp., Phoenix, Ariz. No. 2,916,-378.

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Foam-Batter Cakes With Egg White, Sugar, Farinaceous Ingredient, Auxiliary Whipping and Anti-Foaming Agents. — T. P. Finucane, General Foods Corp., White Plains, N.Y. No. 2,916,379.

Reacting Monosaccharide With Amino Compound, Its Hydroxy-Derivatives and Suitable Salts and Esters of This Amino in Presence of Water at Elevated Temperature to Produce Honey Flavor.—I. D. Morton, Lever Bros., N.Y.C. No. 2,916,382.

Concentrating Fruit Juices by Freeze-Separating Water Crystals.—H. A. Toulmin, Jr., Union Carbide Corp., N.Y.C. No. 2,916,386.

Coating Green Coffee Beans With Coffee-Bean Wax to Inhibit Perspiration During Roasting.—M. Specht, Hankensbuttel, Germany. No. 2,917,387.

Making Steak Product by Grinding Beef With Fat and Binder, Extruding, Freezing, Tempering, Slicing. — Del Love, Armour and Company, Chicago. No. 2,917,388.

Want more information on any of those recent patents—if so you may obtain detailed printed copies by writing direct to The Commissioner of Patents, Washington 25, D. C., giving serial number of those you want and enclosing 25¢ for each copy.

PACKAGING

Indicator for Frozen Food Packages.—J. H. Hammond, Jr., Gloucester, Mass. No. 2,915,405.

Settling Means for Draw-Type Wrapping Machine.—J. S. Bartlo, Lynch Corp., Anderson, Ind. No. 2,915,-866.

Introducing Inert Gas Into Head-Space of Filled Jars Prior to Capping.—J. Hohl, Owens-Illinois Glass Co., Toledo, O. No. 2,917,880.

Cake Mix Package Comprising Water- and Oil-Proof Bag to Which Consumer Adds Liquid and Shakes to Make Batter.—R. H. Hurley, Proctor & Gamble, Cincinnati. No. 2,918,377.

Sealing Uncooked Foods in Container With Thermally Insulative Aerated Cooking Shortening.—R. V. Joiner, Chicago. No. 2,918,378.

Thin-Walled Plastic Container With Ribs Having Small Air-Penetrating Holes. —R. Lurie, Campbell-Lurie Plastics, Inc., Jacksonville, Fla. No. 2,918,379.

Magazine-Feeding Canned Products Into Paperboard Wrapping Machine.—E. L. Arneson, Federal Paper Board Co., Bogota, N.J. No. 2,919,526.

EQUIPMENT

Bin Level Indicator With Series of Spaced Actuators Arranged Vertically.—E. A. Strader, Massena, N.Y. No. 2,915,205.

Blending Mill for Adding Liquids to Dry Materials.—J. J. Fischer, Patterson-Kelley Co., E. Stroudsburg, Pa. No. 2,915,300.

Crab Meat Extractor With Rotating Drum and Perforated Rim.—G. P. Woolf, San Francisco. No. 2,915,-781.

Comminutor Comprising Two Frame-Mounted Screens, Rake, Cutting Cylinder and Comb. — W. H. Lannert, Food Machinery & Chemical Corp., San Jose, Calif. No. 2,915,184.

Shoe-Mounted Reaction-Type Ultrasonic Vibrator for Foaming Beer in Open-Top Containers. — G. E. Pray, Electronic Assistance Corp., Red Bank, N.J. No. 2,916,266.

Extruder for Forming and Twisting Dough Strips for Straightline Feeding to Fat Fryer. — A. Kipnis, Forest Hills, N.Y. No. 2,917,008.

Cutter and Conveyor System for Severing Single Column of Wafer Blocks Transversely and Longitudinally Into Sandiches. — K. Farrer, Baker Perkins, Ltd., Peterborough, Northlands, England. No. 2,917,009.

Rotary-Type Potato Slicer. —N. B. Henry, Decatur, Ga. No. 2,917,093.

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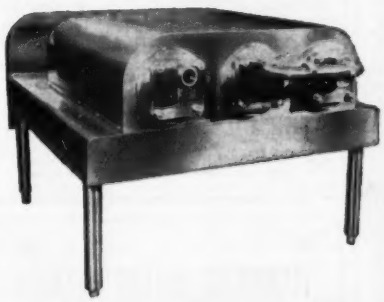

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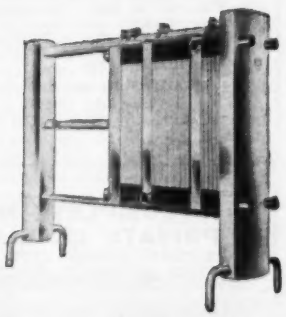

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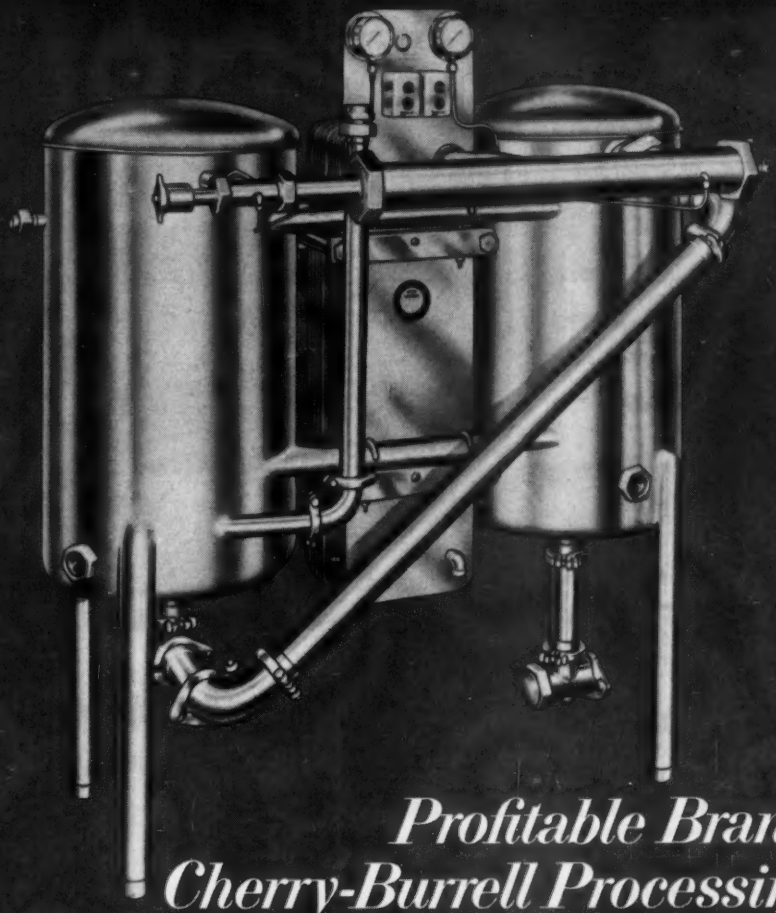

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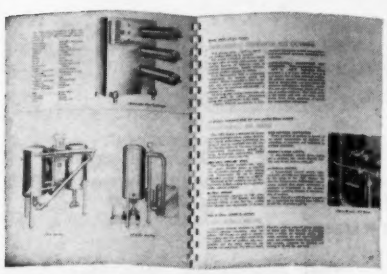

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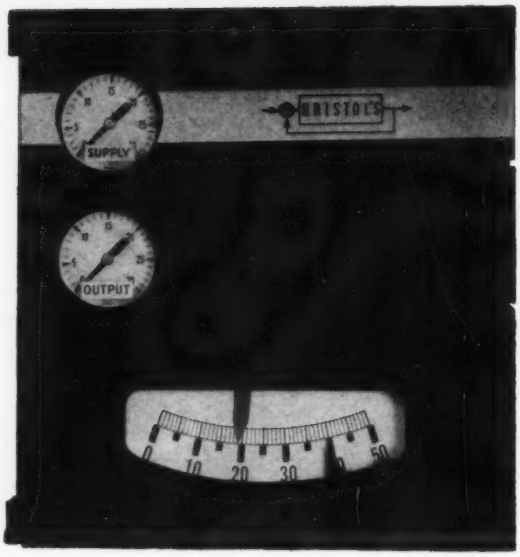

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